

Unit 5: *Shadows and Reflections*

Week 4

Full Day Schedule

Unit 5 Week 4	Day 1	Day 2	Day 3	DAY 4	DAY 5
Read Aloud	<i>The Puddle Pail</i> , 2nd Read	<i>Moonbear's Shadow</i> , 3rd Read	<i>The Puddle Pail</i> , 3rd Read	<i>Moonbear's Shadow</i> , 4th Read	<i>The Puddle Pail</i> , 4th Read
Centers					
Intro to Centers	Shadow Search Stained Glass	Making Collections Gone Fishing	Who Works at Night? Writing About Collections	Building a Museum	
Art Studio	Stained Glass Collage	continue	continue	Add Glitter Play Dough	continue
Easel					
Writing and Drawing	Shadow Search	continue	Writing About Collections	continue	continue
Library & Listening			Who Works at Night?	continue	continue
Dramatization		Gone Fishing	continue	continue	continue
Blocks	Experimenting with Shadows continues.	continue	continue	Building a Museum	continue
Discovery Table	Sandplay continues Add seashells	continue	continue	continue	continue

Puzzles & Manipulatives		Making Collections	continue	Initial Consonant Sound/Letter Matching Game	continue
Technology	Discovery: digital microscope		LFOAI: Tablet for museum collections		
Thinking & Feedback					
SWPL Whole Group	Refer to Clipboard Directions				
Whole Group Lessons	LFOAI: Stained Glass	Math: The Napping House	LFOAI: Museum Collections	LFOAI: Light is Helpful	Problem Story (class discusses issues impacting classroom community) or social/emotional curriculum

Small Groups	Group1 Literacy Medium Support: Initial Consonant Sound/Letter Matching Game Group 2 Math Low Support: Napping House Art Group 3 Independent Teacher's Choice		Group1 Literacy High Support: Shadow Tracings Group 2 Math Low Support: Mirror Building Group 3 Independent Teacher's Choice		
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Outdoor Learning	Refer to Nature Extensions for Individual Lesson plans	small groups: read <i>Zinnia's Flower Garden</i> ; planting seeds	small groups: Hike to find flowers		
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Unit 5 Week 4 Discovery

Making Collections

NAMING WORDS	ACTION WORDS	DESCRIBING WORDS
collection artifact group display museum	collect gather group sort display curate	same different similar related

Comments / Questions / Expanded Conversation

RIGHT HERE:

- **Use Self Talk + Open Questions – for example:**

I am putting these pieces together to make a collection because they look similar. They all have shiny parts. What other pieces can you find for my collection?

- **Use Self Talk + Model Teacher Response to Question:**
I enjoy making collections. What do you think is fun about creating collections?

CONNECT TO TEXT: (focus on vocabulary)

Sol and Ernst collected many different things in *The Puddle Pail*. I think it would be interesting to have several different kinds of collections, but I think it would be hard to collect reflections.

NON-IMMEDIATE EVENTS: (focus on vocabulary)

I was at a museum that had a collection of glass flowers. There were many different kinds of flowers, and they were all made out of beautiful colored glass. You could look at them, but you weren't allowed to touch them.

Stained Glass Collage

NAMING WORDS	ACTION WORDS	DESCRIBING WORDS
cellophane stained glass shadow surface	shine illuminate design	translucent opaque colorful

Comments / Questions / Expanded Conversation

RIGHT HERE:

• **Use Parallel Talk – for example:**

You made a design with your stained glass that reminds me one of the reflections we saw in *The Puddle Pail*. It looks like lots of sparkling stars in the night sky.

• **Build Up Vocabulary:**

You made a turtle. You designed a turtle image. That is an elaborate and detailed turtle that you created with stained glass.

CONNECT TO TEXT:

Let's make stained glass images of the animals that lived by the pond in the book, *Play With Me*. What animals were in that book?

NON-IMMEDIATE EVENTS:

I went to the Museum of Fine Arts in Boston and I saw an exhibit of different kinds of stained glass. That museum has stained glass, sculptures, and paintings.

Let's pretend that we have an art museum here in our class.

Paintings Inspired by *Dreams*

NAMING WORDS	ACTION WORDS	DESCRIBING WORDS
scene colors light puppies shadow reflection background flashlight illustration mouse windowsill	paint create design combine draw shade observe notice shine	unique unusual interesting creative artistic huge tiny

Comments / Questions / Expanded Conversation

RIGHT HERE:

- **Use Parallel Talk + Forced Choice Questions for example:**

You are painting the shadow of the puppy on the wall just like in the picture. Your painting reminds me of the illustration in the book. Should I create an illustration of a mouse’s shadow or a puppy’s shadow?

- **Use Self Talk – for example:**

I am going to paint a huge mouse shadow. I am going to use dark paint. Look. Here is the tiny mouse and here is the huge shadow in my picture.

- **Use Encouragement to Support Effort – for example:**

That is a very unusual painting. It is one of a kind; you worked hard to make it different from everyone else’s. It is unique!

CONNECT TO TEXT:

In the book, *Dreams*, Roberto had a little paper mouse on his windowsill. It fell out of the window and cast a huge shadow as it fell. The shadow scared the dog away from the cat.

Let’s paint some paper animals. We can cut them out and put them on the windowsill.

NON-IMMEDIATE EVENTS:

What would happen if you took a flashlight and shined the light on your paper animal?

Unit 5 Week 4 Puzzles and Manipulatives

Shadow Puzzles

NAMING WORDS	ACTION WORDS	DESCRIBING WORDS
shadow object piece surface part whole	solve add turn place rotate complete match align	similar position words matching left/right bottom top different

Comments / Questions / Expanded Conversation

RIGHT HERE:

• **Use Parallel Talk + Prediction:**

You found piece that fits and attached it. I see the picture starting to emerge. What shadow do you predict this will be?

You are matching similar lines- curved lines and curved lines, straight lines and straight lines. That looks like a helpful technique for completing the puzzle.

CONNECT TO TEXT:

In *Dreams* and *Night Shift Daddy* there were different kinds of shadows. I wonder what kinds of shadows we will see in these puzzles.

NON-IMMEDIATE EVENTS:

I think I would like to take my camera and photograph some of the shadows that I see outside, and then I could turn those photographs into shadow puzzles like these.

Night City

NAMING WORDS	ACTION WORDS	DESCRIBING WORDS
structure house neighborhood window light shadow custodian surface	sweep construct depict create	transparent dark opaque near close / closer / closest

Comments / Questions / Expanded Conversation

RIGHT HERE:

- **Use Parallel Talk with a Focus on Morphology + Open Ended Question – for example:**

I see you are constructing a neighborhood. There are several houses close to each other. If you build them even closer they will be touching. Then they will be the closest they can be. What else would be near these houses in a neighborhood?

- **Use Self Talk + Open Ended Questions – for example:**

I am building a tall building. I am framing it so that it has many windows. It looks like an apartment building where many families can live. What do you think it would be like to live in a building like this? (pause for a response) How do you think people can get to the top floor?

- **Use Parallel Talk + Open Ended Questions for example:**

When you shine a flashlight on the building it makes a shadow because the walls of the building are opaque. The light can't shine through the walls, it reflects off the walls. But, if you shine it through the window, what happens?
(pause for response) The light shines through it because it is transparent.

CONNECT TO TEXT:

This tall building with many windows reminds me of the building where the daddy worked as a custodian in the book *Night Shift Daddy*. I wonder if we can think of a way to illustrate dreams in the different windows.

NON-IMMEDIATE EVENTS:

I lived in an apartment building on the third floor and I walked up the stairs. There is an elevator in the building where I live now. How do you get upstairs where you live?

Writing About Collections

NAMING WORDS	ACTION WORDS	DESCRIBING WORDS
collection label object title group detail	organize represent gather explain collect describe depict discuss	

Comments / Questions / Expanded Conversation

RIGHT HERE:

- **Use Self Talk + Open Ended Question – for example:**
 I am creating an illustration of my rock collection. What kind of collection did you create? How will you illustrate it? What will you write about it?

- **Use Encouragement to Support Effort – for example:**
 (If the child is using a word card) You are being very careful to make each of your letters look similar to the letters on the card.

CONNECT TO TEXT:

I am writing about another collection I made. Remember the collections that Sol and Ernst made in *The Puddle Pail*? It might be fun to write about one of those collections. I could pretend to be Sol or Ernst as I write.

NON-IMMEDIATE EVENTS:

When I am choosing a book to read I look at the illustration on the cover. If it is an interesting picture it makes me curious to see what it says inside. After I have read a book that I like, I look for other books written by the same author, just like we have read two books by Elisa Kleven.

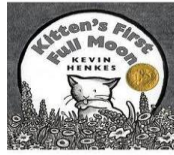
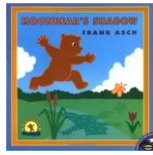


Shadow Search



Writing & Drawing

Standards:
 ATL.RPS.PS.3-6
 ELA.W.PD.PS.1
 ELA.W.R.PS.1-2
 M.G.PS.7 -8



Materials:

- *Moonbear's Shadow*
- *Kitten's First Full Moon*
- children's *Classroom Maps*
- paper
- clipboards
- writing utensils
- flashlights

Vocabulary:

- shadow
- surface
- block
- map
- search
- light (source)
- shine
- label

Preparation: Set up materials.

Intro to Centers:

"In *Moonbear's Shadow*, Bear's shadow followed him everywhere. What do you notice?"

"At the end of the story, the sun, the **light source**, was at a different place in the sky. How did that affect Bear's shadow?"

"In *Kitten's First Full Moon*, the kitten **blocked** the **light** from the moon. What do you notice?"

"Kitten's **shadow** is on the ground behind her."

"Today in Writing and Drawing, you can **search** for **shadows** in the classroom using these materials. How can your *Classroom Maps* be helpful to you?"

"You can **label** where you found **shadows** on your classroom **map**."

Show illustrations.
Children respond.

Show illustrations.
Children respond.

Children respond.

Show illustrations.
Children respond.

Show materials.
Children respond.

Model.

During Centers:

Encourage children to collaborate, i.e., one child creates shadows with the flashlight, another child labels the map. Encourage children to experiment with changing shadow size by holding the flashlight closer and further away. Encourage children to create graphs to document their search, i.e, how many shadows were created with a natural/artificial light source, how many shadows were found in the different classroom areas, etc. Encourage children to search for shadows in other Read Alouds, i.e., Corduroy's shadow when the night watchman found him.

Guiding Questions during Centers:

- How many more/less shadows were created with a natural/artificial light source? How do you know?
- What part of the classroom had the most/least shadows? Why?
- How is searching for shadows similar to or different from searching for colors/reflections?
- How are the shadows you found similar to or different from the illustrations of shadows in *Moonbear's Shadow/Kitten's First Full Moon*?

Thinking & Feedback: Invite children to share their processes. Encourage children to describe the challenges they might have encountered.

Documentation: Collect samples of the children's work as well as photographs and/or video of their process; use the documentation to launch a discussion during Thinking and Feedback.

Provocation:

Document a school/neighborhood *Shadow Search* with child-made maps.



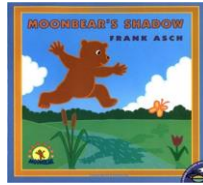
Gone Fishing



Dramatization

Standards:

MELDS.SED.SD.BRC.
PS.13
MELDS.M.MP.PS.2
MELDS.M.OAT.PS.2
MELDS.M.MD.PS.2
MELDS.M.MD.PS.10


Materials:

- *Moonbear's Shadow*
- rocking boat, laundry basket or large box
- magnetic fishing poles
- pails
- fish
- paper clips
- small ruler or stick
- fish resources

Vocabulary:

- fishing pole
- names of fish
- bait
- reeling
- casting
- line
- measure
- ruler
- size

Preparation: Gather materials. Use a rocking boat/stairs or laundry baskets/cardboard boxes for fishing boats. Use magnetic fishing poles or make your own using dowels, string and ring magnets. Cut and laminate fish, attach a paper clip to the fish. Use small rulers, stick or a piece of card stock for measuring fish.

Intro to Centers:

"In *Moonbear's Shadow*, Bear was trying to catch a fish. What do you notice?"

"In Drama, you can pretend to catch fish from a boat. What do you need to go fishing?"

"When fish are too small, you have to put them back in the water. You can use your ruler to measure the fish. If it is smaller than your ruler, you have to release it; if the fish is larger than your ruler, you may put it in your bucket."

"Why do you think you have to release the smaller fish?"

Show illustrations.
Children respond.

Children respond.

Model.

Children respond.

Guiding Questions during Centers:

- How many fish did you catch?
- How do you know your fish is big enough to keep?
- Which fish is the biggest? How do you know?
- Did you ever go fishing? Can you tell us about it?

Thinking & Feedback: Invite children to share their processes. Encourage children to describe the challenges they might have encountered.

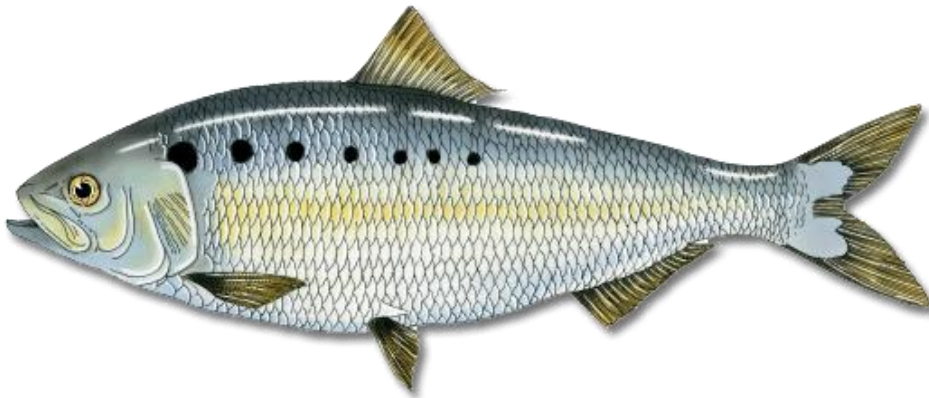
Documentation: Collect samples of the children's work as well as photographs and/or video of their process; use the documentation to launch a discussion during Thinking and Feedback.

Provocation: Encourage children to line up their fish from smallest to largest. Encourage children to make props and backdrops for the lake/ocean/pond.





Lake Trout



Shad



Salmon



White Perch



Sunfish



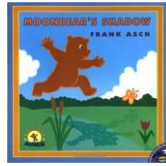
Mackerel



Stained Glass Collage


Standards:

ATL.EP .PS.1 -5
CA.VA.PS.1-5
CA.DE.PS.1 -3
M.MD.PS.1-2


Materials:

- contact paper
- frames for stained glass i.e., paper plates with hole cut in center, popsicle sticks or cardboard attached at corners
- tissue paper or colored cellophane
- scissors
- images of stained glass windows
- flashlights

Vocabulary:

- light source
- stained glass
- shine
- translucent

Preparation: Create frames for the stained glass.

Intro to Centers:

“Here are images of windows made with **stained glass**. Who has seen **stained glass**. before? Where?”

“Today in the Art Studio, you can create **stained glass** collages with these materials.”

“What do you predict will happen if I **shine** a light on my **stained glass** window? What do you predict will happen if I hang my **stained glass** when light **shines** through the **stained glass**?”

“We can see the **light source** through the collage because the tissue/cellophane is **translucent**.”

Show images.

*Show materials.
Model.*

*Model.
Children respond.*

During Centers:

Encourage children to notice different shapes in their collage. Compare and contrast children’s collages. Encourage children to use their collages as backdrops in Blocks/Dramatization. Encourage children to write stories/descriptions of their collages.

Guiding Questions during Centers:

- What happens if you put two different colored pieces of tissue paper/cellophane on top of each other?
- How is stained glass collages similar to mosaics?
- How would your stained glass collage look at night/day?
- How does your stained glass look similar to or different from the images?

Thinking & Feedback: Invite children to share their processes. Encourage children to describe the challenges they might have encountered.

Documentation: Collect samples of the children's work as well as photographs and/or video of their process; use the documentation to launch a discussion during Thinking and Feedback.

Provocation:

Arrange a field trip/neighborhood walk. Document places that have stained glass windows, i.e., public buildings, churches, places of worship, and libraries.

**Wk 3 Art Studio/Wk 4 LFOAI:
Stained Glass**



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Making Collections



Puzzles &
Manipulatives

Standards:

SED.SD.BRC.PS.14-16
ATL.EP.PS.1-5
ELA.SL.CC.PS.1-3
PHD.FM.PS.5-6



Materials:

- *The Puddle Pail*
- Collection images
- small trays and containers
- Beautiful Stuff, variety of counters, small objects

Vocabulary:

- collect (-ion)
- exhibit
- information
- museum

Preparation: Set up materials.

Intro to Centers:

““In *The Puddle Pail*, Sol and Ernst filled their pails. What do you notice?”

“Sol gathered rocks, feathers, and string. Ernst gathered puddles. They created **collections** of the things they liked.”

“Here are images of **museum collections**. What do you notice?”

“Museums **display** their **collections** in **exhibits** with **information** about the collections.”

“Today in Discovery, you can create **collections** with these materials. I will make a **collection** of these things. What could I name my **collection**?”

“When you completed your **collection**, you could go to the Writing and Drawing Center to make labels and write/draw information about your **collection**.”

Show illustrations.

Children respond.

Show images. Children respond.

Read exhibit name/information.

Show materials. Model.

Children respond.

During Centers:

Encourage children to collaborate. Compare and contrast children’s collections to each other’s/Sol’s and Ernst’s collections. Challenge children to create exhibits of their collections and display them in the classroom.

Guiding Questions during Centers:

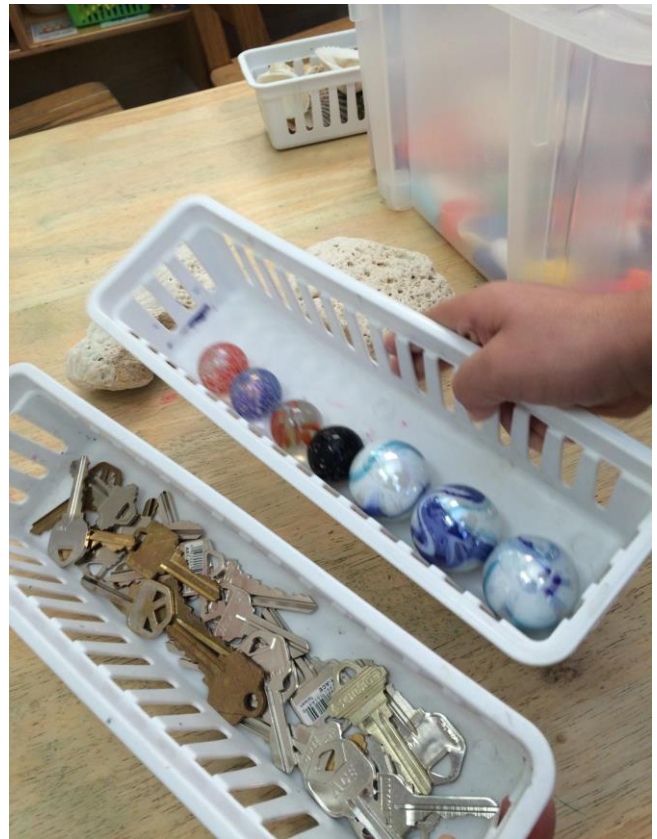
- What inspired you to create your collection?
- How are the objects in your collection similar to or different from each other?
- Which collection has more/ fewer items? How do you know?
- How is your collection similar to or different from Ernst's collection in *The Puddle Pail*?

Thinking & Feedback: Invite children to share their processes. Encourage children to describe the challenges they might have encountered.

Documentation: Collect samples of the children's work as well as photographs and/or video of their process; use the documentation to launch a discussion during Thinking and Feedback.

Provocation:

Arrange and document a field trip to a local museum. Invite other classrooms to a museum of children's collections.





Who Works at Night?


Standards:

ELA.W.TTP.PS.2
 ELA.W.R.PS.1-2
 ELA.IT.D.PS.1-3
 ELA.IT.S.PS.1-3
 ELA.IT.I.PS.1-2
 S.LS.PS.2, 6


Materials:

- *Night Job*
- *Who Works At Night?* resource
- blank books
- paper
- writing tools

Vocabulary:

- custodian
- work
- building
- research
- job
- information

Preparation: Gather materials. Bind pages of *Who Works At Night?* like a book.

Intro to Centers:

"In *Night Job*, the Dad opens the door to the school and the building sighs. What do you notice?"

"His Dad went to **work**. What do you notice?"

"He was a **custodian**--someone who takes care of and cleans **buildings**. What do you notice?"

"Why did he **work** at his **job** at night, instead of during the day?"

"It was easier to do his **job** of cleaning the **building** at night because all the people in the school were at home asleep."

"The title of this book is, *Who Works At Night?*"

"Many people work at night with different jobs. Today in Library and Listening, you can **research** jobs that people do at night."

Show illustrations.
Children respond.

Children respond.

Show illustrations.
Children respond.

Children respond.

Read book.

Show materials.

During Centers:

Compare and contrast people working at night to people working during the day. Encourage children to act out the jobs they researched in Dramatization.

Guiding Questions during Centers:

- How is work people do at night similar to or different from work during the day?
- Why is (job) done at night?
- How are artificial light sources helpful to people who work at night?

Thinking & Feedback: Invite children to share their processes. Encourage children to describe the challenges they might have encountered.

Documentation: Collect samples of the children’s work as well as photographs and/or video of their process; use the documentation to launch a discussion during Thinking and Feedback.

Provocation:

Invite a night-shift worker to the classroom to talk about their job. Write a letter with questions to the school custodian, i.e., *Why is your job easier to do at night?*

would you rather have a night job or a day job?

night 	day 

Who Works at Night?



Police officers work at night.



Pilots and flight attendants work at night.



Construction workers work at night.



Factory workers work at night



Doctors and nurses work at night.



Fishermen work at night.



Chefs and servers work at night.



Truck drivers work at night



Custodians work at night



Office workers work at night.



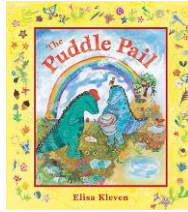
Building a Museum



Blocks

Standards:

CA.DE.PS.1-2
 ELA.SL.CC.PS.1-3
 ELA.RL.IKI.PS.1-2
 ELA.RL.LTC.PS.1
 ATL.EP.PS.1-4



Materials:

- *Puddle Pail*
- Beautiful Stuff
- writing tools
- Beautiful Stuff
- felt
- paper
- clipboards
- Unit blocks

Vocabulary:

- museum
- collection
- display (case)
- graph
- divide
- skyline

Preparation: Set up materials.

Intro to Centers:

“In *Puddle Pail*, Ernest and Sal made collections. What do you notice?”

“ In blocks, you can build **display** shelves or cases to **display** your **collections**”

“ You could also build a **display** case and use blocks to **divide** your **collections**.

“Then you can make signs to inform museum visitors about your **collections**.”

Show illustrations.

Children respond.

Model building a shelf out of unit blocks and add Beautiful Stuff

Model writing or drawing a sign.

During Centers:

Encourage children to label their collections. Challenge children to build shelves with multiple levels. Use felt to make the display more attractive.

Guiding Questions during Centers:

- How did you build your display case?
- How can we make your shelf larger so we can display the rest of the collection?
- What sign will you make for your display?

Thinking & Feedback: Invite children to share their processes. Encourage children to describe the challenges they might have encountered.

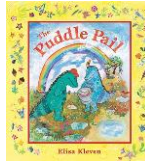
Documentation: Collect samples of the children's work as well as photographs and/or video of their process; use the documentation to launch a discussion during Thinking and Feedback.

Provocation: Use unit blocks to make graphs of different collections. Ask questions about greater and smaller collections.





Writing About Collections



Materials:

- *The Puddle Pail*
- paper
- Collections resource
- “My collection of _____” template
- writing tools
- children’s collections from *Making Collections*

Vocabulary:

- collection
- museum
- exhibit
- curator
- information

Preparation: Set up materials.

Intro to Centers:

“In *The Puddle Pail*, Sol and Ernst filled their pails. What do you notice?”

“If Sol labelled the things in his pail, he could write: ‘rocks, feathers, and string **collection**’. What could Ernst write if he labelled the puddles in his pail?”

“Here are images of **museum exhibits**. The **curator** labelled and wrote **information** about this **collection** of (_____).”

“Here is a **collection** I created and labelled (_____). What do you notice?”

“My (_____) **collection** is special because (_____). I will write that **information** about my **collection**.”

“Today in Writing and Drawing, you can create labels and write **information** about your **collections** with these materials.”

Show illustrations.
Children respond.

Children respond.

Read exhibit label and description.

Show collection. Children respond.

Model.

Show children’s collections. Show materials.

During Centers:

Support children in creating labels for and writing information about their collections. Compare and contrast children’s collections to their friends’/museum collections. Encourage children to create graphs of the number of objects in their collections. Encourage children to sort/label groups of collections, i.e., (*Jaylen, Sarah, and Micah have collections of round things, Cliff, Hermainia, and Luana have collections of little things, etc.*) Encourage children to use Beautiful Stuff to create exhibits of their collections.

Guiding Questions during Centers:

- How is your collection similar to or different from your friend's/Sol's and Ernst's /the museum collections?
- What information do you want someone to know about your collection?
- How can you create an exhibit for your collection?
- What could you name a museum of these (similar) collections?

Thinking & Feedback: Invite children to share their processes. Encourage children to describe the challenges they might have encountered.

Documentation: Collect samples of the children's work as well as photographs and/or video of their process; use the documentation to launch a discussion during Thinking and Feedback.

Provocation:

Visit and document a trip to a museum. Invite a museum curator/artist/tour guide to the classroom. Encourage children to create a classroom museum in Dramatization/Blocks.

My Collection of: _____

Collections



A collection can have things that are all the same or a little different from each other. A collection is made up of things that are special or meaningful to the person collecting them.



A curator chooses what is in a collection and how it will be displayed or shown to others. A curator takes good care of the collection.



Collections can tell stories!



You can collect all kinds of things.



You can display your collection in many ways.



What kinds of things do you collect?

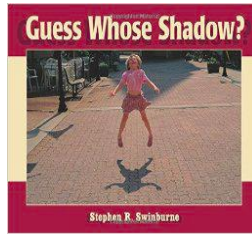


Small Groups: Initial Consonant Sounds/Letter Game

Support: Medium

Standards:

.ELA.RF.PA.PS.
1.d -1e
ELA.RF.PWR.PS
.1-2

**Materials:**

- *Guess Whose Shadow?*
- Shadow images
- Letter cards resource
- trays

Vocabulary:

- shadow
- letter sound
- match

Preparation: Set up materials.

Procedure:

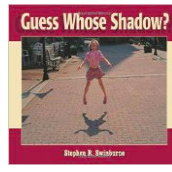
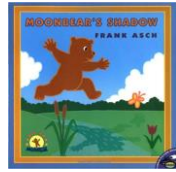
Show cards with shadow images and letters. Model turning over a shadow image card, say the name of the image aloud, emphasize the initial sound, and match the shadow image to the initial consonant sound. Encourage children to generate other words that have the same initial consonant sound on their card match. Challenge children to match ending sounds.

Small Groups: Shadow Tracings

Support: High

Standards:

ELA.IT.I.PS.1-2
ELA.IT.LTC.PS.1
ELA.W.PD.PS.1
ELA.W.R.PS.1-2



Materials:

- *Moonbear's Shadow*
- *Guess Whose Shadow?*
- large sheets of butcher paper
- black crayons
- black markers
- flashlights
- chalk (outside)

Vocabulary:

- trace
- shadow
- light source
- surface
- flat
- outline
- pose

Preparation: Set up materials.

Procedure:

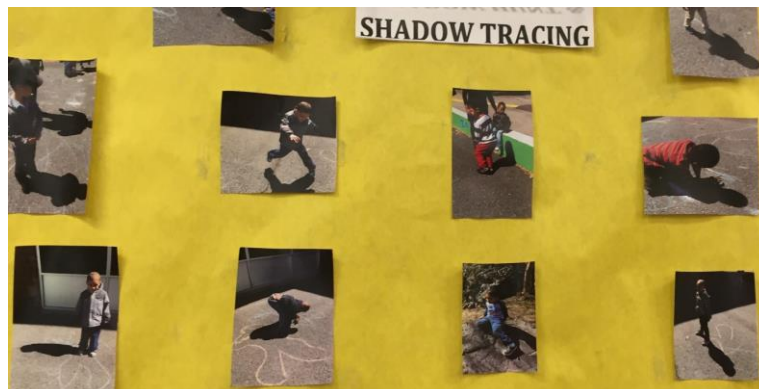
Show illustrations in *Moonbear's Shadow* and images in *Guess Whose Shadow?* Review how shadows are created and what affects their size and shape. Model creating a simple shadow of your hand and tracing its outline.

Pair children and show materials for creating and tracing shadows of each other's bodies. Weather and staffing permitting, do this activity outside, using a natural light source.

Encourage children to stand in poses such as arms outstretched so that shadows have definition, rather than "blobs." Support children in collaborating, as standing still for a period of time can be a challenge.

Compare and contrast *Shadow Tracings* done outside to *Shadow Tracings* done inside.

Invite family volunteers to assist.



Unit 5  Week 4	<i>Small Groups: Napping House Art</i> Low Support	Math SG1	Standards: MELDS.CA.VA.PS.3 MELDS.M.MP.PS.4 MELDS.M.MD.PS.5
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Guiding Math Ideas:

- Integrated Projects- STEAM, **Science**, Technology, Engineering, **Arts**, and Math
- Patterns- Adding Complexity
- How does light affect the ways things look? (from Essential Questions)

Math Concepts from Unit Learning Progressions:

- Science and Math are a natural fit
- Math is a part of many learning projects – Uses Math in STEM or STEAM activities
- Patterns- Growing complexity

This activity also meets an Art Standard.

Materials:

- *The Napping House* by Audrey Wood and Don Wood
- Watercolors
- Water
- Brushes
- Paper
- A selection of clear containers of paint in Dark Medium and Light Colors*
- Sticky notes or index cards

Math Vocabulary:

- Observation: Looking seriously and carefully at something in order to learn
- Gradations: gradual changes, like the paintings in *The Napping House*

Preparation:

This activity follows the Large Group reading and acting out of *The Napping House*

Preparation will depend on the type of watercolors your program uses. You can choose Dark Medium and Light Colors, * *It would be more hands-on if the children can do this. If possible have the children name and select the dark and the light colors.*

On sticky notes write Dark Lighter Light and some arrows indicating how the pain fades from dark to light. Place all supplies in Small Group Area.

Procedure:

Today we are going to paint Napping House pictures.

Show book.

*In large Group, we had a lot of fun acting out this book about people and animals piling into a bed.... And then suddenly leaving. Scientists, artists and mathematicians use **observation** to learn things. Any ideas*

about what I mean by **observation**? Let's use our power of observation, looking carefully at each page. I'm going to show you the pictures without reading the words.

Slowly turn pages without reading the text.

We are talking about light, shadows and reflections. Do you have any **observations** about about light, shadows or reflections as I turned the pages of this book?

Each page gets lighter and lighter. This is a type of growing pattern—the light increases or gets brighter with each page. In Small Group today we will explore this pattern. A slow change like this in color or light is called **gradation**. What else do you see?

Children may have many more comments about things they notice in the book.

What do you observe about our paints?

Yes, some are dark and some are light.

Let's try painting Napping House pictures, One idea is to paint pictures that are dark and then get lighter How could we do that?

Children give ideas.

One idea is to start on one wide with dark paint and then end up at the other side with light paint.

Write on Sticky Notes and put on or beside paints.

These words say Dark, Medium and Light. Children paint. Children can also add water to lighten up darker paints. Demonstrate this if they show interest.

Another option is Buddy painting, using large paper with 2 children working together.

As they paint, talk about things that change from dark to light or from light to dark. Children may have different ideas about what is dark, medium or light. Children may or may not paint in an organized manner- No problem! Wrap up and discuss paintings with children.

Strategies to Provoke Math Thinking:

- Observation: The power of observation is a useful one for young mathematicians and scientists to develop. This low-key activity allows children plenty of time to observe and experience STEAM projects- it includes science, art and math.
- Gradual change: Nature is full of examples of gradual change, and is a good “teacher” for children who may pay more attention (like adults) to sudden or dramatic change. Although there are “right” answers in math, change and flexibility are also important in mathematical thinking.

Adaptations for Additional Learning:


- Set up a color mixing station in the art center and encourage children to mix and label unique colors using the color equations from Unit 4, or creating their own equations.
- Observation station: The classic celery/colored water science experiment is a perfect example of gradual change. Brainstorm with children about adding math to this experiment. Measuring the progress of colored water up the stalk? Adding the same amount of water each day to the glass?

Documentation:

- As the week or unit ends, bring some of the Dark/Light pictures to LFOAI or Story-Telling along with the book. Napping House Pictures can also be used as a background for self- directed activities about counting the people in the Napping House.

Provocation:

- Place gradations of a single color of paint at the easel for several days. Label them dark to light and observe any connections children make to Small Group and Large Group.
- Read the book in a semi-dark room. Have a helper gradually turn on the lights, or open the blinds around the room in relation the light increases on the pages.

Unit 5  Week 4	Small Groups: Mirror Building Low Support	Math SG 2	Standards: MELDS.M.CCC.PS.7 MELDS.M.G.O5.3 MELDS.M.MD.PS.11
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<p>Guiding Math Ideas:</p> <ul style="list-style-type: none"> ● Integrated Projects- STEM- Measuring ● Quantity- Reinforcement of all related concepts ● Combining 3-D Shapes <p>Math Concepts from Unit Learning Progressions:</p> <ul style="list-style-type: none"> ● Numerals communicate and represent math ideas. ● We can identify and utilize shape and space concepts in STEM ● Standard measurement means assigning numbers to things.
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<p>Materials:</p> <ul style="list-style-type: none"> ● Tub of Small 3-D Geometric Shapes ● Mirror Tiles or Old Mirrors- One per child or per 2 children ● Rulers ● Paper or Journal for Findings ● Resource books: <i>When I Build with Blocks</i> by Alling Unit 1 and <i>Changes, Changes</i> by Pat Jenkins (Unit 2) ● 3-D Shape Chart 	<p>Math Vocabulary:</p> <ul style="list-style-type: none"> ● Reflection: Light bouncing off of something smooth
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Preparation:

Collect or borrow old mirrors. Cheap mirrors or mirror tiles can also be purchased at craft or home improvement stores.

Gather materials in Small Group Area. Children can build on the floor or table.

Place the resource books (Building books used earlier in the year) on the table for reference.

Procedure:

This is an open-ended exploratory activity.

What have we been learning about reflection?

Children contribute answers.

A reflection happens when light bounces off of something smooth and shiny, like the water in the Puddle Pail, or windows or mirrors.

Today we are going to do some building and measuring in a special way.

Show mirrors and small blocks.

We are going to build right on top of these mirrors. I wonder what it will look like?

[Assign partners or have children build individually].

Building up these towers reminds me a little bit of the Tall Tree Trees we made or the pile of creatures in the Napping House!

*When you finish building, **observe** the way your mirror reflects the blocks. What does it look like?*

It would be fun to count how many blocks high your structure is and record it on our Small Group paper.

You can also measure your structure before you break it down and build another one.

Here are some rulers and some paper for you to record your work. One idea is to draw a picture of your structure and then write how tall it is. I'll be around to help you if you need me.

Children will use a wide range of skills as they think about how to measure their structures. As children build, some will experiment with measuring, drawing and counting. Some children will focus on stacking blocks. Some may write numerals. Others may identify numerals. Others will experiment with how to measure-- holding the ruler next to their structure, making marks, imitating measurement activities they have seen. All of these skills are foundational to the complex skill of measurement (See Strategies Below)

Be sure to name the different 3-D blocks accurately and observe children's identification skills. Refer to your 3-D shape chart, introduced in Units 1 and 2.

Use the books as resources and ideas for children as they create structures and towers.

Observe and support children's measuring and counting skills.

Take pictures of the structures before cleaning up.

Strategies to Provoke Math Thinking:

- Using Reflection as a Teaching Tool: The visual effects of mirrors enhances learning and piques children's interests. Perspective and iteration (repetition) of objects in the mirror connect to art. Many Montessori activities include building on or beside mirrors and observing the effect. What other surfaces in your classroom are reflective and could be used in creative ways?
- Standard Measurement: Experimenting with measurement tools started in Unit 2 and will continue through Unit 6. Mastery of the processes of standard measurement, takes years to develop beyond surface understandings. Some experts say children are ages 8 or 9 before having genuine understanding. Why? Measurement includes complex ideas about units, which change according to the tools used. Different systems of measurement are used in different contexts. Some measurements are additive (putting 1 cup of water into 1 cup of flour does not give us 2 cups of dough); some are cumulative. Plan regular activities in measurement to give children the chance to feel comfortable with tools, to imitate the steps of measurement and to solidify their understanding that measurement means assigning a number to the thing that is measured.

Adaptations for Additional learning:

- Building "Challenges"- Pair up children and give each child a set of the same geometric shapes. Challenge them to create as many different kinds of structures as they can and compare with their partner using identical sets of blocks.
- Mirror building game: Place a barrier such as a folder or box on the table between two children sitting opposite of each other. Using the color spinner, children take turns spinning and selecting

a block of the same color. They must then describe the shape they are using, without letting the other child know with the goal of building identical towers by using attribute descriptions.

Documentation:

Compare these structures to the ones children were building in Unit 2, when small geometric blocks were introduced. How have children grown in their skills, such as identifying shapes, counting, and using measurement tools? If children are building with a partner, how do they use math terms to communicate their ideas.

Provocation:

SWPL activities for this Unit include copying movements, such as the songs *Do What I'm Doing*, or *Mirror Mirror*. These activities have patterns and directionality embedded in them.



Songs, Word Play, & Letters

Day 1:

Materials: poetry posters, felt board and felt animal pieces: goose, duck, lamb, goat, chick and cat

OLD MACDONALD HAD A FARM

Procedure:

- Tell children they are going to sing a song that they haven't sung for many weeks. Put the flannel pieces up on the flannel board and ask children if they can guess what song it is.
- Name the animals and invite children to name them.
- Sing the song as usual naming animals and making an appropriate sound for each one.

GOOD MORNING MRS. HEN

Procedure:

- Ask children if they know what a daddy chicken is called (rooster).
- Read the title, underlining it with a finger. Comment that someone, maybe the owner of the hen, is saying *Good Morning*.
- Recite poem. Comment afterward that maybe Mrs. Hen's chicks hatched recently and someone was asking how many new chicks she had.
- Recite the poem again.

HEAD, SHOULDERS, KNEES AND TOES

Procedure:

- Tell children they need to stand up and sing song as usual...
- Say, "*now we will sing it again with different words and motions. Listen carefully and Watch*".
- Change "Head and shoulder to "Hair and elbows," and change "Eyes and ears" to Eyes and cheeks," "Knees and toes" stays the same.

NIGHT JOB

Procedure:

- Show the cover of the book and tell children this is a new book about a boy whose father works at night
- Read the title and point to and sound out N in Night, J in Job. Read the name of the author and the illustrator. Read the book, keeping the natural flow.
- Go back through the book to talk about the story.

Day 2:

Materials: poetry posters, book: *Night Job*, flannel board and pieces for "Barnyard" song

OPEN SHUT THEM

Procedure:

- Hold both hands up and them open and close them. Ask children if they can guess what song will be first today.
- Sing the song as usual and then sing very slowly and then very fast.

I'M A LITTLE TEAPOT

Procedure:

- Sing the song as usual.
- Add this verse: Add a bit of sugar to make it sweet. Stir it in. Then drink the tasty treat. Add motions for the new verse (spooning sugar into a cup, stirring, then pretending to hold a cup to your mouth to drink.)

MY SHADOW

Procedure:

- Explain that the poem is about their shadow. Review some characteristics of shadows, using what children know from recent story books and other unit activities.
- Recite or read the poem.

BARNYARD

Procedure:

- Show the children the card with fiddle – ee –fee written on it. Say, "This is what the cat says, repeatedly, in the song that we will sing next." Point out F, d, and l in fiddle, and to "f" in fee, as you help children sound out the words.
- If children do not recall the title, tell them.
- Then say, "I am going to put the animals at the bottom of the flannel board. Help me name them as I put them there."
- Sing the song as usual.

Day 3:

Materials: poetry poster, sets upper- and lowercase letters, flannel board and pieces for Five Green and Speckled Frogs

FIVE GREEN AND SPECKLED FROGS:

Procedure:

- Say, "The first song we are singing today is "Five Green and Speckled Frogs." We are not singing it the way we usually do, this time, we are going to make some changes."
- One of the five speckled frogs that usually jumps off the log is sick today. How many frogs will play today, if one frog is out sick? After establishing that only four frogs remain, put four frogs on the flannel board. Count the frogs with children as you place them.
- Then say, "There is one more change today. Two frogs from a nearby pool are coming to visit. How many frogs will that make altogether?" Give children time to think about it. Then put two more frogs on the flannel board and count by adding on. Do this by gesturing to the first four frogs, then pointing to each new frog as you say, five, six, as you say, "Okay, we have four frogs to start and then five ... six frogs... all together."
- Start the song with Six green and speckled frogs... When there are four frogs remaining, remove two frogs at once and have children fill in how many frogs are left. Then remove the last remaining two.

CLAP YOUR HANDS

Procedure:

- Sing four or five verses using familiar and new ones ("flick finger" by running forefinger against inside of thumb and "wiggle nose").

LITTLE LETTER/BIG LETTER CHANT

Procedure:

- Distribute uppercase letters that match the lowercase letters selected. Tell children they are going to do the uppercase and lowercase matching activity again.
- Do this chant: *I have the little [name a letter], as you hold it up to show. Take a look to see. Someone has its partner. Who might that someone be?*
- Remind the first few children that they can say: *I have the big [letter name]* when they hold up their card.

LOOBY LOO

Procedure:

- Tell children to stand for "Looby Loo"
- Sing song as usual and add a few new verses. Ask children for ideas of parts of the

body to move in some way.

Day 4:

Materials: poetry poster, felt board and pieces for “Down by the Bay”, set of lowercase letters

DOWN BY THE BAY

Procedure:

- Tell the children they are going to sing a song they haven’t sung for a long time.
- Sing several familiar verses (snake baking a cake, frog walking a dog, mouse painting a house) and add some new verses (goat riding in a boat, sheep driving a jeep)

FIVE LITTLE FISHIES

Procedure:

- Read the title with children. Point to and sound out F in Five, L in Little and F in Fishies.
- Recite the poem, model motions and repeat.

IF YOUR NAME HAS [name a letter] IN IT ANYWHERE, RAISE YOUR HAND

Procedure:

- Select a set of lowercase letters that matches letters in children’s names. At least one letter of each child’s name should be used. For some children, more than one letter you hold up may apply.
- Tell children they are going to do a new activity with their names. This time show children the lowercase letters. Explain that they should raise their hand if the lowercase letter is anywhere in their name, except for the first letter. For example, Emily should not raise her hand when you hold up an e, but Terrence should.
- If children raise their hand when the lowercase letter shown is the first letter in their name, you could say, *Emily, you have an E in your name , but it’s the uppercase letter, the big E not the little one, so you should not raise your hand..*
- For some children hold up their name cards and point to the letters in their name.

WINDSHIELD WIPER

Procedure:

- Tell the children that next you are going to do a poem about something else that happens on a rainy day. Give children a hint that this poem is about something on a car that we turn on when it is raining. If children do not guess right away, put your hands and arms in the windshield wiper pose.
- Recite the poem naturally and model the motions for the children.
- Add a new verse: I’m a windshield wiper. I go fast...or slow. Back and forth, back and forth

in the rain and snow. After saying fast, move your arms back and forth quickly a couple of times. As you say or slow, move your arms slowly. Pick up the usual pace as you say the last two lines.

Day 5:

Materials: poetry posters, Book: *Puddle Pail*, picture card: diamond book: *Raccoon On His Own*, chart paper, markers, Picture Card: crawfish

FIVE LITTLE FISHIES

Procedure:

- Read the title with children. Point to and sound out F in Five, L in Little, and F in Fishies.
- Recite the poem, model motions and repeat.

TWINKLE, TWINKLE, LITTLE STAR

Procedure:

- Tell children that the next song is about objects you see in the night sky and that in the book, Ernst wished he could collect them.
- Say, "Sol saw a reflection of diamonds in the puddle." Show the picture card for diamond and point out that the song compares stars to diamonds, twinkling in the sky. Then sing the song.

I'M A LITTLE TEAPOT

Procedure:

- Stand up to sing the song as usual with the motions.
- Add a second verse: Add a bit of sugar to make it sweet. Stir it in. Then, drink the tasty treat. (spoon in sugar, stir, drink).

INTERESTING SOUNDING WORDS (And Raccoon on His Own)

Procedure:

- We are going to talk about some interesting- sounding words from a book we know."
- Show children the book *Raccoon on His Own* and say, the interesting – sounding words we are going to talk about are from this book.
- Read the first two lines of page two. Then you might say, Sleepy and slowly are interesting because they both start with the same two sounds: /s/ and /l/. Sleepy, slowly. Say the words slowly, drawing out the /s/ and /l/. Then say each word and ask children to say it after you.
 - Tell children you are going to write the two words on the chart paper. Sound out /s/and /l/ carefully in each word, before writing the letter that spells each of these sounds, asking children what letters to use to write them,

- Then turn to the page where mother raccoon found a crawfish and read the first line on the page. Say, I think crunchy and crawfish are interesting words because they both start with the same two sounds: /k/ and /r/. Say the words slowly a couple of times, enunciating carefully. Then ask children to say the words with you one more time. Show children the crawfish Picture Card and comment on specific animal parts (claws, antennae).
- Write crunchy and crawfish on the chart paper, sounding out each word, phoneme by phoneme. Tell children the letter needed to write /k/ and comment that it is C not K, which we use most of the time to write /k/. Ask children the letter used to write /r/ and /n/ in crunchy, and /f/ in crawfish. Name the other letters as you write them.
- You might say, “We use the letter c for /k/ in crunchy even though it sounds like we might use k. We use ch (“seeach”) for /ch/, and y for /ē/, even though the last sound we say in this word is /ē/.

Unit 5  Week 4	<p>Large Group: The Napping House</p> <p>Low to Medium Support</p>	Math LG	Standards: MELDS.M.MP.PS.4 MELDS.M.OAT.PS.3 MELDS.M.OAT.PS.5
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<p>Guiding Math Ideas:</p> <ul style="list-style-type: none"> ● Rote and Rational Counting: Counting Patterns ● Patterns- Adding Complexity <p>Math Concepts From Unit Learning Progressions:</p> <ul style="list-style-type: none"> ● Problem Solving- Acting out story problems. ● There are steps in problem solving: Generating solutions and testing them ● Adding is a 1 + pattern (Shown in Number Sequence) <p>Adaptations for Using Large Group In Alternate Schedule Slots:</p> <ul style="list-style-type: none"> ● Many daily routines involve the 1+ pattern such as lining up or choosing teams. Counting by 1s is a daily example of 1+. Use the language of math to describe these activities.

<p>Materials:</p> <ul style="list-style-type: none"> ● <i>The Napping House</i> by Audrey Wood and Don Wood ● <i>ABABA Book of Pattern Play</i> by Brian Cleary (Resource) 	<p>Math Vocabulary:</p> <ul style="list-style-type: none"> ● Pattern: a repeating arrangement of numbers, colors, shapes, or other items. (Cleary, 2010) ● One more: Adding one more object or creature to a group ● All together: how many are in a whole group
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Preparation:
Designate an area for the Bed in the middle of the circle.

Our book today is The Napping House by Don and Audrey Wood. I think it might be a math book... but you will have to tell me when I am through reading it if it is!
*I will say the same thing over and over. When something repeats, it is called a **pattern**.*

Read book pausing for children to join in the repeating phrase in a napping house where everyone is sleeping.

Help me with the pattern by joining in.... you'll know what to do if you are listening.

On each page something changes... What do you notice that changes?

Yes, each time, **one more** creature (a word for animals and people), gets into the bed. **One more** is a counting pattern- we are **adding** one more person to the group.

I said this was a counting book. Do you notice any numbers on these pages?

I am curious. I wonder how many creatures **all together** got in that bed. All together is a math idea we use a lot.

What does **all together** mean?

Could we count the creatures in the bed even though there are no numbers on the pages?

I wonder how many people would be in our Napping House bed if we **all** pretended we had a big Bed right in the middle of our room?

How could we find out?

Let pretend that we have a big bed in the middle of our circle and we are all getting sleepy!

But wait--We would not be safe if we all piled on top of each other... What could we do?

This sounds like fun- Let's get started!

When I call out

Add 1 More (you can help) and call your name, come and get in the bed!

What is the last creature to get in the bed? [Flea]

What happens when the flea gets in the bed?

I'm going to put this book over in our Small Group area. We will use it again this week.

Children give answers. They will definitely mention that there are more and more people who get in the bed. Reinforce the idea of 1 more as a counting pattern.

Children give ideas about what **all together** means.

Count with the children starting at the beginning, and adding one more each time.

As you turn the pages, if children do not notice the way the illustrations go from dark to light, indicating night to day pattern, give hints.

Use number chart in room, or counting on fingers or touching each child- any strategies children suggest.

Yawn and stretch together.

Children may suggest lying down side by side Re-tell the story in simple fashion, adding the names of the children as they get in the "bed" and using the phrase In the Napping house where everyone is sleeping.

Children answer flea

The last child will be the flea.

When the "flea" gets into the "bed"- everyone jumps out of the "bed", going back to their place, rolling or hopping or jumping. Play again.

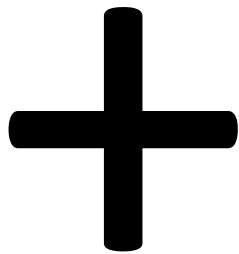
Strategies to Provoke Math Thinking:

There are two types of patterns in this book- The 1 + pattern (A growing pattern); the repeated phrases about the *napping house where everyone is sleeping*. (A repeating pattern). In clever use of ever increasing light from dark to light is related to a pattern (if it increased in a regular, observable

measurable way it would be a pattern. *Refer to the AABBA Book of Pattern Play* for examples of patterns.

Provocation:

Patterns in the Natural World- Use the book *A Walk in the Woods* (Unit's Book List)and go on a Pattern Walk looking for repeating patterns and/or collect nature items bring use them as a teaching moment throughout the day. Examples are sea shells, pine cones, & flowers



1

Let's Find Out About It: Stained Glass

Standards:
ELA.SL.CC.PS.1 -3
ELA.RL.KID.PS.1 -3
.ELA.W.R.PS.1 -2

Materials:

- stained glass window images
- colored cellophane
- flashlight
 - Real stained glass piece

Vocabulary:

- stained glass
- permanent
- washable
- translucent
- light source

Preparation: Set up materials.

Let's Find Out About It:

“Here are images of some windows. What do you notice?”

“These windows are made of pieces of colorful glass. The pieces are called **stained glass**, but the color in **stained glass** is **permanent**, not **washable**, like the **stains** on Max’s dragon shirt.”

“The glass is **translucent**--you can see light shining through the window. What do you notice?”

“**Stained glass** windows depict an image or design.”

*Show illustration.
Children respond.*

Children respond.



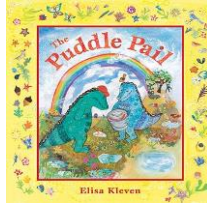


Let's Find Out About It: Museum Collections

Standards:

ELA.SL.CC.PS.1-2

ELA.LS.VAU.PS.1


Materials:

- *The Puddle Pail*
- child-made *Collections*
- Collection images

Vocabulary:

- collection
- curate
- museum
- exhibit

Preparation: Set up materials.

Let's Find Out About It:

"In *The Puddle Pail*, Sol and Ernst filled their pails. What do you notice?"

"Sol gathered rocks, feathers, and string. Ernst gathered puddles. They created **collections** of the things they liked."

"Here are **collections** you created and images of **collections**. What do you notice?"

"You can sometimes find **collections** in **exhibits** within **museums**. A **curator** creates **collections** for a **museum**. The **curators** display **collections** in **exhibits**. What do you notice?"

"**Curators** label **exhibits** with descriptions and information about the **collections**."

Show illustrations. Children respond.

*Show child-made collections.
Show images. Children respond.*

Children respond.

You can collect many things



Insect collection



Seashell Collection



Maine Rock Collection



Bottle Cap Collection



Dried Plants Collection



Stuffed Animal Collection

You can find collections in museums In Maine



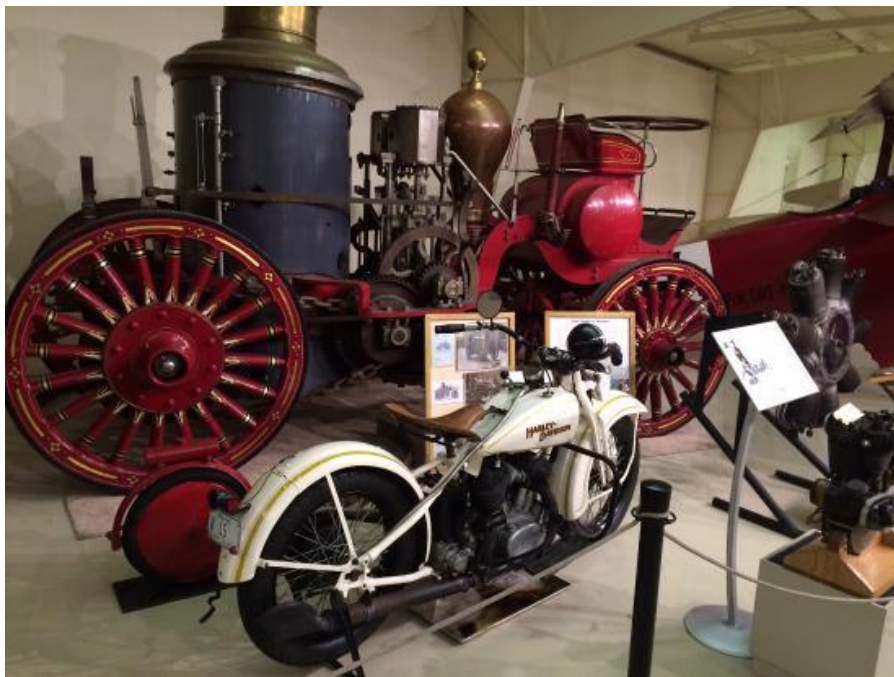
Art museum in Portland, Maine



L.C. Bates Museum in Hinckley, Maine



Maine Lighthouse Museum



Owls Head Transportation Museum

You can find collections in museums around the world



National Museum of Art – Nakanoshima, Japan



Guggenheim Museum Bilbao – Spain



Groninger Museum – Groningen – Holland



Natural History Museum, Washington DC

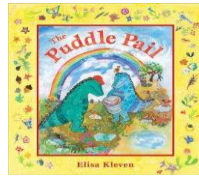


Let's Find Out About It: Light Is Helpful

Standards:

ELA.SL.CC.PS.1-2

ELA.LS.VAU.PS.1


Materials:

- *The Puddle Pail*
- *Night Job*
- Nocturnal Animals images

Vocabulary:

- reflection
- shadow
- natural
- artificial
- light source
- nocturnal
- dark

Preparation: Set up materials.

Let's Find Out About It:

"In *The Puddle Pail*, **reflections** were created in water. In *Night Job*, **shadows** were created on the ground. What do you notice?"

"**Shadows** and **reflections** are created when light shines on objects. In *The Puddle Pail* the **light** comes from the sun--a **natural light source**."

"We read *Night Job*. What are the **light sources** in the story? How was the (light source) helpful to the daddy/boy?"

"The daddy needed to see and work when at night just like this **nocturnal** animal needs to see and work at night."

"**Nocturnal** animals might have big eyes to see in the dark. People use tools like flashlights to see in the dark."

"**Nocturnal** animals use moonlight to work in the dark. People use overhead lights to work at night."


Show illustrations.

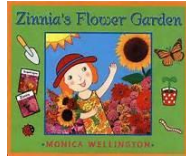
Children respond.

Show illustrations.

Children respond.

Show image.

<p>Unit 5</p>  <p>Week 4</p>	<p>Outdoor Learning Opportunities:</p> <p>Spring Wildflowers – Water or Sunlight</p>	<p>Standards: S.LS.PS.3 SED.SD.BRC.PS.1 ALT.RPS.PS.2-3</p>
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<p>Materials:</p> <ul style="list-style-type: none"> ● Seeds ● Pots ● Soil ● Water ● Sunlight ● Ruler ● Notebook ● Pencils ● Chart paper ● Book: Zinnia's Flower Garden 	<p>Vocabulary:</p> <ul style="list-style-type: none"> ● Experiment ● Sunlight ● Wildflower ● Seeds
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Spring wildflowers emerge before the trees' leaves have burst out. They grow on the forest floor and need the sunlight that comes through because the trees' leaves have not come out yet. To better understand what plants need to grow, the following experiment can be conducted.

As a class the children will create a controlled experiment to see what plants need to grow. Three groups will plant seeds in soil with the following differences. One group will have a plant that has access to water, but no sunlight. Another group will have a plant that has access to sunlight, but no water. A third group will have a plant that has access to sunlight and water. The children will collect data regarding the plants' growth each day for a month. After collecting data, the children can discuss why their plant grew or did not grow.

Extension: Use a wildflower guide and take the children on a hike to find wildflowers. There are many stories associated with these flowers. Children can design their own wildflower and decide what it needs to grow, therefore determining where it will need to live. They can make up their own story about their wildflower and draw a picture of it. Then make a class book.

Guiding Questions:

- What do plants need to grow?

- Can a plant grow if it does not have everything it needs?
- What does it mean to conduct an experiment?
- What are wildflowers and where can we find them? What do wildflowers need to grow?
- Why do wildflowers emerge before the trees' leaves are out?

Unit 5 Week 4	Let's Find Out About It: Museum Collection Lower Level Technology Supplement	ISTE-S 3	Standards: ELA.SL.CC.PS.1-2 ELA.LS.VAU.PS.1
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[book covers that represents the book(s) the lesson touches upon]

Technology Concepts

Students critically curate a variety of resources using digital tools to construct knowledge and make meaningful learning experiences

<p><i>Materials:</i></p> <ul style="list-style-type: none"> ● Tablet 	<p><i>Vocabulary:</i></p> <ul style="list-style-type: none"> ● Use vocabulary from original lesson ● Virtual museum tour ● How do we know this website is trustworthy?
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Preparation:

Tablet

Open virtual museum tours of [Smithsonian Natural History Museums](#)

Procedure:

Instead of showing images of collections, tour the Natural History Museum and find collections

Unit 5 Week 4	Making Collections: Discovery Higher/Lower Level Technology Supplement	ISTE-S 3	Standards: SED.SD.BRC.PS .14-16 ATL.EP.PS.1-5 ELA.SL.CC.PS.1-3 PHD.FM.PS.5-6
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[book covers that represents the book(s) the lesson touches upon]

Technology Concepts

Children critically curate a variety of resources using digital tools to construct knowledge and make meaningful learning experiences for themselves and others

<p><i>Materials:</i></p> <ul style="list-style-type: none"> ● Beautiful stuff, small objects ● Laptop or other device with USB ● Digital Microscope 	<p><i>Vocabulary:</i></p> <ul style="list-style-type: none"> ● Use vocabulary from original lesson ● Compare ● Enlarge ● Examine ● Observations
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Preparation:

Have Beautiful stuff and small objects out for discovery
Laptop or other device with digital microscope connected

Procedure:

As one child examine collection materials using the digital microscope, have another child write down observations. Children can compare observations of materials

Documentation Extension:

Children use tablet to write down observations. Combine written observations with pictures taken and saved with digital microscope using Pages or Word to create a digital science journal

