



Early Childhood
Hands-On Science

Water Play

Integration Cards, or *iCards*, may be used as enrichment activities by the teacher, teacher's aide or volunteer, in any sequence, to integrate Language & Literacy, Math and Creative Arts into the science content presented in this unit.

Language & Literacy

- L1. Fingerplay
- L2. Sing Along Song
- L3. Picture Walk
- L4. Read Aloud

Math

- M1. A Cup of Water Is a Cup of Water
- M2. Questions Drop by Drop
- M3. The Big Spill
- M4. Will It Sink or Float?

Creative Arts

- C1. Watercolor Wash
- C2. Dramatic Play with Water
- C3. The Volume Race
- C4. Sailing into Art

Fingerplay

Guidelines

1. Children should be standing, use a large open space for body movements.
2. Introduce the fingerplay words and hand motions one line at a time. Tell the children: **Say it after me.**
3. Use rhythm and hand motions to engage the children.
4. As the children recite the fingerplay chant, ask them to use soft voices, then loud voices.

Float or Sink?

Sung to the tune of "Row, Row, Row Your Boat"

Float, float, float or sink?

(Lift both arms up with palms facing up, then flip them down.)

What will happen next?

(Shrug shoulders, lift both hands both facing up.)

Drop a rock in the tub.

(Close all fingers together and pretend to drop rock.)

Will it sink or float?

(Shrug shoulders, lift both hands both facing up, then flip down.)

Let's try!

Float, float, float or sink?

(Lift both arms up with palms facing up, then flip them down.)

What will happen next?

(Shrug shoulders, lift both hands both facing up.)

Drop a ping pong in the tub.

(Close fingers together and pretend to drop a ping pong ball.)

Will it sink or float?

(Shrug shoulders, lift both hands both facing up, then flip down.)

Let's try!

Float, float, float or sink?

(Lift both arms up with palms facing up, then flip them down.)

What will happen next?

(Shrug shoulders, lift both hands both facing up.)

Drop a golf ball in the tub.

(Close fingers together and pretend to drop a golf ball.)

Will it sink or float?

(Shrug shoulders, lift both hands both facing up, then flip down.)

Let's try!

Sing Along Song

Guidelines

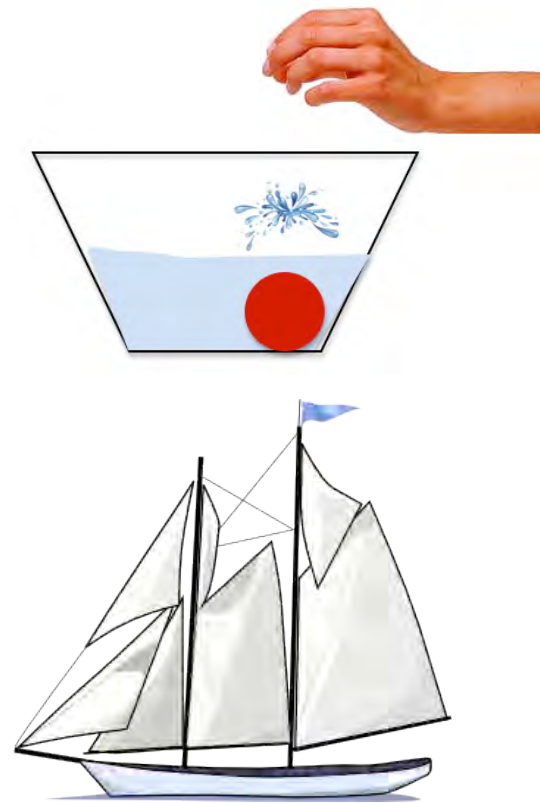
1. Introduce the song and motions one line at a time. Tell the children: **Sing after me. Do what I do.**
2. When children know the words, sing the song together.

Splash, Splash, Splash

Sung to the tune of "The Wheels on the Bus"

Oh, the water in the bowl goes
Splash, splash, splash,
Splash, splash, splash,
Splash, splash, splash.
Oh, the water in the bowl goes
Splash, splash, splash,
When the ball sinks down.

Oh, the boat on the water goes
Whoosh, whoosh, whoosh,
Whoosh, whoosh, whoosh,
Whoosh, whoosh, whoosh,
Oh, the boat on the water goes
Whoosh, whoosh, whoosh,
As it floats on top.



Picture Walk

Guidelines

1. Choose a book.

Select a book from the *Water Play Picture Walk Books* list. If these books are not available, find another content-related book filled with rich, detailed pictures.

2. Get to know the book.

Read the story to yourself before sharing the book with the children. Notice how the illustrations tell the story.

3. Enjoy reading time!

Make sure everyone is comfortable and able to see the book. If needed, establish rules for good behavior.

Taking a picture walk through a book is one of the earliest stages of reading. It enables children to “read” books by looking at the pictures. Ideal Picture Walk books have rich illustrations. When a book has too much text to hold children’s attention, use it to show just the pictures. Wordless books are also a great choice for Picture Walks.

1. Before conducting the picture walk:

Let the children know you are going to read this book by looking at the pictures.

- Show the cover of the book.
- Read the title, the author’s name, and the illustrator’s name.
- Ask children to predict what they think the story will be about based on the cover and the title.

2. While conducting the picture walk:

- Slowly go through the book, page by page.
- Ask a few questions about each picture. For example:

What do you see in this picture?

Have you ever seen _____? Tell me something about it. (Substitute with a word related to the book; a character, animal or place.)

Where is this part of the story taking place?

Where do you think they are going?

What do you think will happen next?

3. Share the book again and again.

When children like a book, they want to “read” it over and over.

4. Place the book in the science or book area for the children to enjoy.



Picture Walk Books

Lesson 1: What a Mess!

What Is Volume? by Lisa Trumbuer

Volume is the measure of how much space something takes up. Comparisons to cooking link measuring liquids to the science concept of volume.

Lesson 2: Moving on Up!

What Can You Do with Water? by Marcia S. Freeman

You can water plants with water. But what else can you do with water? Simple sentences describe the many uses of water.

Lesson 3: Which One?

Just a Little Bit by Ann Tompert

When an elephant and a mouse try to play on a seesaw, they need help from a vast number of animal friends to balance the scales.

Lesson 4: Unsinkable Shapes

Floating and Sinking by Ellen S. Niz

Introduces the concepts of floating and sinking, and how they are used in the world.



Read Aloud

Guidelines

1. Choose a book.

Select a book from the *Water Play Read Aloud Books* list. If these books are not available, find another content-related book.

2. Get to know the book.

- Read the story to yourself before reading the book to your class.
- Plan ways to change your voice to fit the plot and characters.
- Gather props.

3. Enjoy reading time!

Make sure everyone is comfortable and able to see the book. If needed, establish rules for good behavior.

When children are read to, they are likely to grow into good readers. As they listen to stories, children hear rich vocabulary and proper language structure, and learn new information about the world. Being read to increases imagination, creativity, and curiosity. When selecting a book for a Read Aloud, consider the amount of text and the children's attention span.

1. Before reading the story:

- Show the cover of the book.
- Read the title, the author's name, and the illustrator's name.

2. While reading the story the first time:

- Focus on the flow of the story.
- Read with expression, change your voice for different characters.
- Vary the reading speed: fast for exciting parts, slow for scary or quiet parts.

3. After reading the story:

- Ask a few questions about the book. For example:

Who would you like to be in the story?

When did the story get exciting/scary?

What would you have done?

Why did they do that?

Where did the story happen?

How would you change the ending?

- Have the children re-tell the story or act out their favorite part.

4. For additional readings:

- Invite children to ask questions or discuss the story.
- Encourage children to say words they remember from the story as you read them.
- Assist children in recognizing the sounds that make up words.

5. Leave the book in the science or book area for the children to enjoy.



Read Aloud Books

Lesson 1: What a Mess!

Measuring and Comparing: How Full is Full? by Vic Parker

In this book, children will discover how we measure capacity and how different bodies of water compare. A bucket can hold more than a glass of water, but what can hold more than a bucket?

Lesson 2: Moving on Up!

ECHOS Book: *Summer Splash* by Ava Goldman

During a summer pool day, two kids and their Tío explore how water overflows. They observe water displacement in a pool and watch from a distance as Tío makes one great, big splash.

Lesson 3: Which One?

Mighty Maddie by Stuart J. Murphy

As Maddie cleans up her room, she learns how to compare the weights of various objects. Maddie's ballerina tutu is very light, but she discovers that feathers are even lighter.

Lesson 4: Unsinkable Shapes

Who Sank the Boat? by Pamela Allen

The reader is invited to guess who causes a boat to sink when five animal friends of varying sizes decide to go for a boat ride.



A Cup of Water Is a Cup of Water

Materials

- plastic tablecloth
- water
- paper towels
- water bucket
- 8-oz. plastic bottle
- funnel
- measuring cup

For each child:

- two bowls or containers that are different sizes or shapes, large enough to hold more than one cup of water
- small cup

Preparation

1. Cover the work table with a tablecloth.
2. Fill bucket with water and place next to the table.
3. Place containers and paper towels on the table.

Children explore the idea that the volume of water stays the same when poured from one container to another.

Procedure

1. Say: **Today we are going to pour water into different containers.**
2. Fill the measuring cup with one cup of water from the water bucket. **This is one cup!**
3. **Now I am going to pour one cup of water into this empty bottle.** Use the funnel to pour the water into the 8-oz. plastic bottle. Ask: **Is this the same amount of water that was in the measuring cup?** Listen to the children's responses.
4. **Let's test your answer.** Pour the water from the bottle back into the measuring cup. **Is it the same amount of water?** Listen to the children's responses. **Yes. It's the same amount. It doesn't matter what size or shape the container is — a cup of water is a cup of water.**
5. Give each child one cup and two bowls or containers of different sizes. Guide the children as they pour water from the cup to the containers. Children should notice that *a cup of water is a cup of water* each time they pour from one container to the next. The volume of the water never changes, *unless they spill it, that is!*



Questions Drop by Drop

Materials

- plastic tablecloth
- water
- three 8-oz. clear plastic cups
- black permanent marker
- plastic spoon
- blue food coloring
- paper towels
- additional cup to discard water

For each child:

- dropper

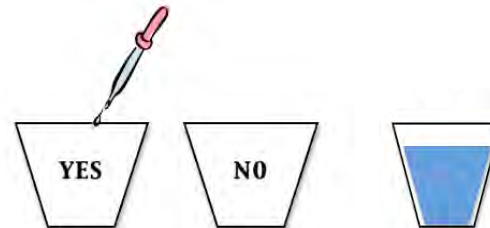
Preparation

1. Cover the work table with the tablecloth.
2. Use permanent marker to label one cup “yes” and the other cup “no”.
3. Fill the third cup half way with water. Add three drops of blue food coloring and mix using plastic spoon.
4. Place the following items on the table: three prepared plastic cups, droppers, additional cup and paper towels.

Children “pool” their answers to questions using drops of water.

Procedure

1. Say: **Today we will play a game with questions about water. I’ll ask a question and you will answer by putting five drops of blue water in the “yes” cup or the “no” cup.**
2. Give each child a dropper. Show the children the cup of blue water and the yes and no cups.
3. Ask this same question to each child at his/her turn:
Will a heavy rock sink?
Allow each child a turn to answer the same question by placing five drops of water either in the “yes” or the “no” cup.
4. After each child has had a turn, ask: **Are there more yes answers or more no answers?**
Prompt the children to check which cup has the most water.
5. Discard water in “yes” and “no” cups before asking another question.
6. Continue the activity by asking additional questions, such as:
 - **Is one drop of water bigger than one cup of water?** Answer: No.
 - **Can you measure water?** Answer: Yes.
7. If time permits, have the children ask yes or no questions. The questions may be about anything: whether someone is wearing a red shirt, whether they like peanut butter, etc.



The Big Spill

Materials

- plastic tablecloth
- water
- pitcher
- paper towels
- sand
- measuring cup

For each child:

- 5-oz. clear plastic cup
- bowl filled with 1 cup of sand
- plastic spoon
- small tray (if available)

Preparation

1. Cover the work table with the tablecloth.
2. Use the measuring cup to fill each of the 5-oz. cups with 4 oz. of water.
3. Place the following items on the table: bowls of sand, spoons, plastic cups, and paper towels.

Children count how many spoonfuls of sand it takes to make a cup of water overflow.

Procedure

1. Say: **Today we are going to make water spill. We call that *overflow*.**
2. **First, you need a cup of water.** Give each child a 5-oz. cup filled with 4 oz. of water.
3. **I wonder how we can make a cup of water overflow? What's your idea?** Listen to the children's responses.
4. **Today, we are going to use sand to make water spill or overflow. We will place spoonfuls of sand inside our cups until water spills.**
5. Direct children to use the plastic spoons to place spoonfuls of sand inside the plastic cups. **Let's count together.** Count with the group as they put the sand inside.
6. **Why did the water overflow?** Listen to the children's responses. **The sand we put inside the cup pushed the water up over the edge and caused it to overflow.**
7. As an extension to this activity, experiment with different amounts of water and sand to make the cup of water overflow.



Will It Sink or Float?

Materials

- plastic tablecloth
- water
- paper towels
- 24" x 18" chart paper
- *Chart Cards* page
- masking tape
- marker

For each child:

- two small bowls
- set of objects that sink and float: paper clip, penny, feather, shell, button, rubberband

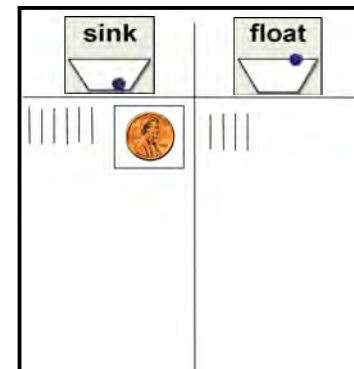
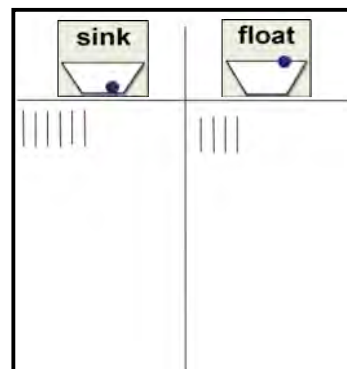
Preparation

1. Cover the work table with the tablecloth.
2. Fill one bowl per child halfway with water.
3. Place set of objects that sink or float in second bowl.
4. Make one copy of the *Chart Cards* page. Cut out the cards.
5. Create a two-column chart on the chart paper. Tape the *Sink* and *Float* cards at the top of the columns.

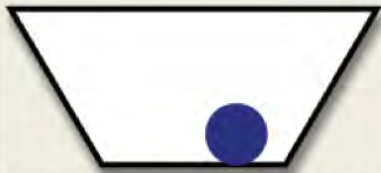
Children experiment with various objects that sink or float, and then chart their observations.

Procedure

1. Say: **We are going to predict which objects sink in water.**
2. Give each child a bowl half filled with water and a bowl containing a set of various objects that sink or float.
3. Hold up an object card. Say the name of one object at a time. Ask: **Will it sink or float? What do you predict?** Keep a tally of each child's prediction by drawing a single short line to the far left of the sink or float column.
4. Guide the children to find the object that matches the card, and then drop it into their bowl of water. Ask: **Did it sink or float?**
5. Tape the object card in the sink or float column, depending on what the children observed.
6. Count the tally marks with the children to find out whether their prediction was correct.
7. Continue calling the name of each object and follow steps 3-6.



sink



float



Watercolor Wash

Materials

- plastic tablecloth
- water
- paper towels

For each child:

- 5-oz. cup of water
- set of watercolors
- paintbrush
- sheet of drawing paper

Preparation

1. Cover the work table with tablecloth.
2. Place one set per child of the following on the table: cup of water, set of watercolors, paintbrush, sheet of drawing paper.

Children explore painting with watercolors using different volumes of water.

Procedure

1. Say: **We are going to paint with watercolors.**
2. Give each child a paintbrush, paper, cup of water, and set of watercolors.
3. Model how to use different volumes of water when painting.
 - Dip brush into water and drop one drop of water onto a selected color. Paint a shape on the paper.
 - Dip brush into water again, but this time drop several drops of water onto the selected color. Paint the same shape next to the first one.
 - Ask the children what they notice about the two shapes.
4. Invite children to use the watercolors to create a painting. Encourage children to use different amounts of water. Ask:
 - **What happened when you used a little bit of water?**
 - **What happened when you used a lot of water?**
5. When the children are done, ask them to tell you about their painting.
6. As a variation of this activity, use droppers to add water to the watercolors.



Dramatic Play with Water

Materials

- masking tape or chalk

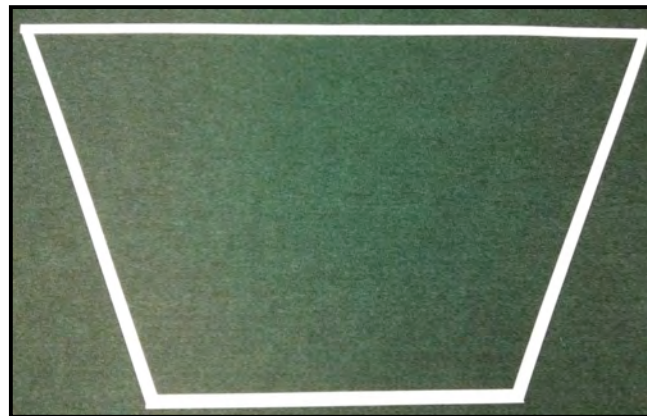
Preparation

Use the masking tape or chalk to make a “bucket” shape on the floor. It should be large enough for most of the children to stand in.

Children pretend to be drops of water pouring into a bucket.

Procedure

1. Say: **We are going to pretend to be drops of water pouring into a bucket. You will each be a drop of water in the bucket.**
2. Point to the taped or drawn “bucket” on the floor. **How many “drops” do you think it will take to fill our pretend bucket?** Listen to the children’s predictions.
3. **Before we start, let’s learn what sound a water drop makes: drip, drop, drip, drop. Let’s practice making the sound of a water drop.** Provide time for children practice the sound of a water drop.
4. Direct the children, one by one, to “drop” into the “bucket”. Count as each child steps into the bucket shape. When the bucket shape gets full, count the number of children in the bucket.
5. Repeat procedure until every child has had an opportunity to be a water drop inside the bucket.



The Volume Race

Materials

- two half gallon containers (bowl, small buckets, plastic milk container with top removed)
- two paper grocery bags
- forty 5-oz. cups
- large tray
- water
- marker

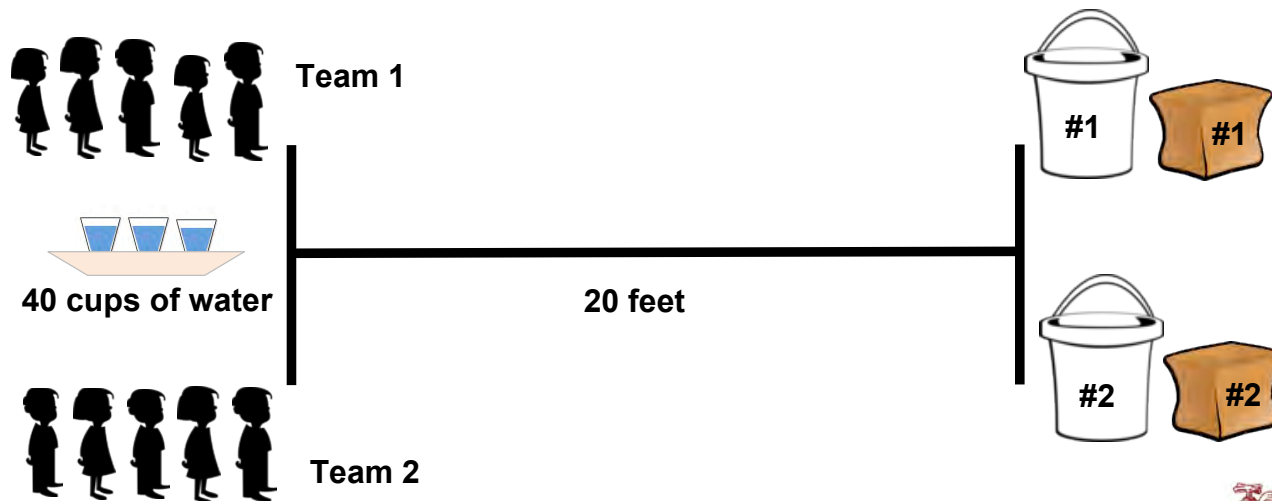
Preparation

1. Find an outdoor area to set up a 20' relay race course.
2. Place two buckets at one end of the course. Place buckets about 3' apart.
3. Label one bucket with a large #1. Label the other bucket with a large #2.
4. Open the paper grocery bags and place one next to each bucket. Label each bag (#1 and #2).
5. Place 40 small cups of water on a tray. Place tray at the other end of the course.

Children use small containers to fill up a larger container.

Procedure

1. Say: **Today we are going to play an outdoor game. We are going to use small containers to fill up a large container.**
2. Divide the group into two teams, and line up the teams at the cup end of the racecourse.
3. Explain to the children that each team member will:
 - Start at the cup end: pick up a cup of water and run to the bucket end.
 - At the bucket end: pour the water into their team's bucket and throw the empty cup into their team's bag.
 - Run back to their team's line on the cup end of the race course.
 - The next child in the line repeats the procedure. Continue until the bucket is full of water.
4. When both buckets are full, help children count the number of empty cups in each team's pile. Review how many cups it took to fill each bucket.



Sailing into Art

Materials

- several sheets of 9" x 12" construction paper
- tape
- *How to Make a Paper Boat* instructions page

For each child:

- sailboat
- crayons

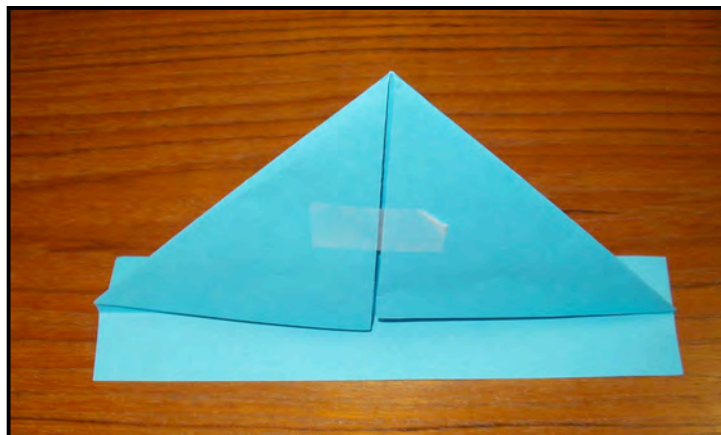
Preparation

Follow the *How to Make a Paper Boat* instructions to create a construction paper boat for each child.

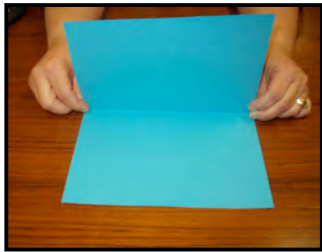
Children decorate their very own sailboat.

Procedure

1. Say: **Today we are going to decorate paper sailboats.**
2. Give each child a sailboat and crayons.
3. Encourage children to draw and color their sailboat.
4. Once the children have finished decorating their sailboat, ask each child to tell you about their sailboat.



How to Make a Paper Boat



1. Fold paper in half horizontally from top to bottom.



5. Flip over and fold in flap on the other side.



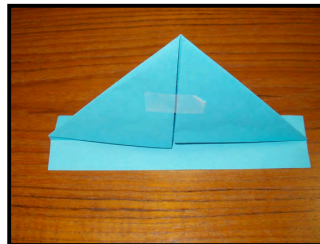
2. Position the open side away from you. Fold the two corners of the creased edge down toward the center of the paper.



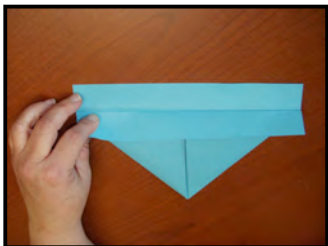
6. Use your fingers to flatten the flaps.



3. Use a one-inch strip of tape to secure the two corners.



7. Make sure the boat can stand up by itself on a flat surface.



4. Fold the bottom of one side to create a flap.