Summer Activities: Super Sand & Water!

Grades: PreK–K

Overview

Recommended Materials
- sieve
- colander
- funnels
- different containers
- aquarium
- boats
- plastic tubing
- magnifier
- sorting tray
Building Skills
Expand on the sand water activities in this section, or involve children in your own sand and water activities to help them build skills in:
- Estimating
- Experimenting
- Predicting
- Temporal relationships
- Problem solving
- Measurement
- Volume
- Sensory integration
- Social interaction
- Creative expression
- Hand-eye coordination

Introduction
What happens when children pour water through a funnel? They begin to understand science and math concepts such as flow, force, gravity, and volume. What happens when children mold sand to create a tunnel? They develop skills in areas such as problem solving and predicting. They also gain knowledge about absorption and the properties of sand and water, and what happens when they are mixed together. Sand and water encourage children to use everything from science skills to creative thinking skills. But most of all they are just plain fun!

Getting Started
Before introducing the activities, try these ideas to get children thinking like a sand and water scientist:
- Bring a large, see-through plastic container, a bag of rocks, and a bag of sand to group time. Ask children to fill the container with rocks. Is it full? What will happen if we add sand to
the container? Will it fit? Children will be surprised to see that the "full" container can now hold an amazing amount of sand.

• Bring a heavy-duty sandwich bag filled with water to group time. Invite children to feel it, talk about it, and brainstorm how water can be used. Then, with a trusty dishpan underneath, ask children what will happen if you make a tiny hole in the bag. What will happen if more holes are made? Will the water flow differently? Once the water is safely in the dishpan, ask children to predict what will happen if you put in a piece of paper. Is there a way to make the paper float?

• Take children outdoors so they can combine sand and water to explore wet sand. How does it feel in your hands? What kinds of things can you do with wet sand that you can't do when it's dry?

Using the Activities
Science activities with sand and water naturally lead to all kinds of fun extensions into other curriculum areas. Here is a suggestion for each of the activities you'll find in this section:

Build math skills into the "Water Paintings" activity. Invite children to measure the evaporation of water in a cup. Ask children to place plastic cups of water in a number of places on the playground and inside. (It is easier to see if you put food coloring in the water.) Use a marker or a piece of tape to mark the height of the water in each glass. Throughout the next few days, visit the glasses and mark the current level.

Add weight exploration to the "Float a Boat" activity. Invite children to try to sink a boat instead. Ask them to predict how many cubes, coins, or stones it will take to sink a particular boat. Test out their ideas. Which items sank the boat fastest? Why?
Add descriptive vocabulary skills to the "Sand Table Investigations" activity. Ask children to brainstorm words to describe dry sand and wet sand. Write these in two columns on chart paper. How are the words the same or different? Invite children to use the words in a "Sand is..." poem by listing the words and reading them just as they would a poem.

Add some creative expression to the "Go with the Flow" activity. Invite children to create straw-blow water paintings. Use water mixed with food coloring or very wet watercolors. Children drop a few droplets of paint on paper and then use a straw to blow the paint around to create a picture. What happens when the colors combine? What would happen if we did this on paper towels instead of drawing paper?

Build music skills with the "Mud Pies and More" activity. Add a song to the process. You can sing "Patty-Cake, Patty-Cake," or make up a mud song, such as "Mud, Glorious Mud" to the tune of "Food, Glorious Food" from the play "Oliver." Invite children to suggest lyrics that describe the joy of playing with mud.

Investigate nature with the "All Soaked Up" activity. Invite children to use their sponges to experiment with the rain cycle. Ask them to pretend their sponge is a cloud. Let them use a sprayer to lightly spray the sponge with water so that it's damp. This is like a "cloudy day." Invite them to squeeze the sponge to see if any water comes out. Then ask them to spray the sponge cloud so that it fills up with "water vapor." (It will start dripping a light rain shower.) Ask, "What will happen if you squeeze your cloud sponge?" Yes, a rainstorm!

Conversation Starters and Questions
A few well-placed questions can start a multitude of conversations. Try these sand and water questions to spark the wonder of science in your children:

- How many words can we think of to describe sand and water?
- What would happen if you mixed sand and water?
- Who and what need water to live?
- How many ways can we change sand?
• How many ways can we change water?
• What would happen if you left a dish of water in the sun?
• What tools can you find or create to move sand or water from one place to another?
• Can you find a way to make play dough float?
• What would happen if we painted the sidewalk with water?
• How can we use magnets and different metal objects in the sandbox or sand table?
• Will a sponge float or sink when placed in water?
• How many different ways can you use a sponge?
• What if you dug around in the sand with your hands and looked for things, all while keeping your eyes tightly closed?
Activity 1

Float a Boat

Help children construct their own seaworthy vessel

Grades: PreK–K, 1–2

BOOKS
Boats on the River* by Peter Mandel
The Little Sailboat by Lois Lenski
Who Sank the Boat? by Pamela Allen

SKILLS: Children will expand upon their problem-solving and creative-thinking skills as they learn about the concept of sinking and floating through making boats with various materials.

MATERIALS:
- cups (paper, styrofoam, and plastic)
- empty milk cartons, egg cartons, butter tubs
- styrofoam packing pieces and trays
- small cardboard boxes
- foil, paper rolls, and craft sticks
- glue, masking tape, and yarn or string
- water table, small wading pool, or basin
- waterproof marker
- camera and album

IN ADVANCE: Send a note home to families requesting the suggested recycled materials for this boatmaking activity.
ACTIVITY
1 During group time, read books about boats, such as Boat Book by Gail Gibbons (Holiday House) or Boats by Byron Barton (HarperFestival).
2 Engage the children in a conversation about boats to find out what they already know. Ask children to think about what makes a boat float on water and what makes it sink. Explain to children that they will each have an opportunity to design their own boat to float in the water.
3 Set up the art area with the suggested materials. Invite small groups of children to the table to work on their boat. Encourage them to look at the different types of materials and experiment. Leave a small basin of water on the table so that children can test their creations. Offer assistance if needed.
4 When children have completed their boats, explain to them that most boats have names. Encourage them to think of a special name for their boat. Help children write the name on each of their boats with a waterproof marker.
5 Now it's time for a sailing party. A snack of cookies and juice is a perfect way to celebrate. Fill your basins, wading pools, or water table with water. Take a picture of each child with her boat. Also photograph the entire "sea of boats." Make a class "boat book" for the children's library.

For younger children: Spend some time working on float/sink experiments. See if they can guess which objects will sink and which will float before they test each one.

For older children: see if children can find ways to sink the boats they create. What objects and materials will make their boats sink quickly? What objects and materials can the boats carry without sinking?

SPIN-OFF
Have a Regatta! Explain to children that the word regatta means a series of boat races. Include the children in planning different ways to use air to propel their boats. Provide the children with straws, cardboard, and paper tubes. Ask them to think of ways to use these materials to create wind for the boats. An electric fan could be used with adult supervision. Encourage children to experiment.

Book Resources
Exploring Water with Young Children by Ingrid Chalufour and Karen Worth (Redleaf Press)
Activity 2

Go with the Flow

Soak, pour, sprinkle, spray: How can children make water move?

Grades: PreK–K

BOOKS

I Am Water* by Jean Marzollo
Splish Splash by Joan Bransfield Graham
Water by Frank Asch

SKILLS: Children develop problem-solving and science skills as they predict which materials can be used to move water and have fun experimenting with them.

MATERIALS:

- chart paper and marker
- sponges
- dish towel, felt, and paper towels
- smocks
- basters and eye droppers
- water pumps
- two basins, large plastic bowls, or a water table
- plastic straws, variety of plastic tubes, and plastic cups
- empty plastic spray and pump soap containers
- sand (optional for older children)

**IN ADVANCE:** In addition to these suggested materials, select several different objects, such as wooden blocks, Legos, paintbrushes, and plastic spoons to include in your experiment. Prepare a sheet of chart paper by listing the name of each object.

**ACTIVITY**

1. During group time, engage the children in a conversation about how water moves. Ask them to think about water at home. How does water enter their sink? How does water get picked up when it spills? Invite children to think about the different ways water can be moved. Using chart paper, list children's responses.

2. Place all the materials you have collected in the center of your group area. Ask children to look at the materials and predict which ones could be used to move water. Explain to children that they will conduct experiments using different materials to learn about how water can be moved.

3. Invite a group of four to six children to choose several materials to experiment with. Give them a water table or basin. (Children may need some assistance in learning how to use a siphon or plastic straw to draw water.) Help children learn new words that describe how the water is being moved:
   "Look how the towel absorbs the water." "Suction pulls the water into the baster." Keep a record of each group's materials and the results of their experiments.

4. Give children the opportunity to work with the different materials for several days. At the end of the week, gather children together and discuss their observations.

5. Present the list of materials. Engage the children in a discussion about the different materials they used and the ways in which water could be moved. Record children's observations to document their research.
For younger children: Provide children with sponges of all shapes and sizes. Let them use the sponges to absorb water from a basin, and then fill the empty containers. Which sponges fill the containers more quickly?

For older children: Give children plenty of opportunity to try the same experiments with sand. Which objects move sand more easily? What other objects can they find around the room to move sand from one place to another?

SPIN-OFF
Paint with water and chalk. Provide children with a grater and a variety of colored chalk. Place water in a shallow baking pan and invite children to place the grated chalk into the water and stir it. Then ask them to float a piece of paper on top and watch a painting develop. Encourage children to describe what has happened.
Activity 3
Sand Table Investigations
Explore the differences between wet and dry sand.

Grades: PreK–K

SKILLS: Children will learn about weight, volume, and the changing properties of wet and dry sand.

MATERIALS:
- table or basin of sand
- sand shovels, scoops, and spoons
- plastic containers of different sizes, such as yogurt cups, buckets, and margarine tubs
- chart paper and marker
- basin or bucket of water
- strainers or sieves
- sand/water wheel

ACTIVITY
1 Invite a small group of children to join you at the sand table. Provide them with sand toys to investigate the sand. Encourage them to describe what they are doing and how the sand feels.
2 Encourage children to fill different containers with sand. Ask them to estimate how many scoops of sand it will take to fill a yogurt cup, a sand bucket, and so on. Write their estimates on a piece of chart paper and invite them to fill the containers to see if their guess was correct.
3 Bring a bucket or basin of water to the sand area. Ask children what they think will happen if they add water to the sand. Fill a small plastic container or measuring cup with water and invite a child to pour it into the sand. Ask: "What happens to the sand? How does the wet sand feel? Does the wet sand look the same as the dry sand?"
4 Explain to children that you would like to keep one side of the sand table dry and one side wet so they can investigate the difference. Pour water onto the wet sand area until it is well saturated. Encourage children to use the sand toys to investigate the wet and dry sand.

5 Ask children to pour dry sand into a strainer or sieve. What happens to the sand? Now invite them to pour wet sand into the same object. What happens? Place a sand/water wheel into the sand table. Ask children to investigate the wheel using both types of sand and to discuss their findings.

**For younger children:** Give them plenty of time to explore wet and dry sand. Can they work together to create sand castles, forts, and tunnels that will hold their shape?

**For older children:** Using the same containers children filled earlier with dry sand, ask them if they think the same number of scoops of wet sand will fill the same container. Record children's estimates before inviting them to conduct their investigation. Assist children in counting the number of scoops. Compare their guesses with the actual amount of scoops.

**SPIN-OFF**
Weigh the sand. Give the children a pan-balance scale, cups, and wet and dry sand. Using two cups of equal size, invite children to fill one with wet sand and the other with dry sand. Ask them to guess which cup of sand will be heavier. Place each cup on either side of the scale. Did they guess correctly? Ask children to place cups of dry sand onto the scale until the balance is equal.
**Activity 4**

**All Soaked Up!**
Big sponges. Little sponges. How much water can they absorb?

Grades: PreK–K

**SKILLS:** Children will learn how sponges of different sizes absorb different quantities of water.

**MATERIALS:**
- sponges of varying sizes
- water table or basin
- smocks
- plastic measuring cups, bowls, and containers
- water wheel
- food coloring and manila construction paper (optional for older children)

**ACTIVITY**

1. Place sponges of varying sizes by a water table or basin. Invite a small group of children to put on their smocks and join you there. Ask children to investigate the materials and squeeze the different sponges. Explain how the water gets soaked up or absorbed by the sponge.

2. Fill a plastic container with a small amount of water. Invite one of the children to place his sponge into the container. Once the water has been absorbed, ask him to lift the sponge up. Ask: "Where did the water go?" Invite him to squeeze the sponge to see where the water has gone.

3. Provide children with small, empty plastic containers or measuring cups. Invite them to fill the containers with water from the basin or water table using the sponges. How many water-soaked sponges will it take to fill different-sized containers? Pass a medium-sized container to children and ask them to take turns squeezing water from their sponges until the container is full. Count with children to see how many sponges it takes.

4. Place a water wheel on the water table. Ask children to squeeze water from their sponges onto the wheel. What happens?
For younger children: Take children outdoors. Provide large sponges used for washing cars and large basins of water. Hold a "clean the playground" party. Invite children to put on plastic aprons and wash the swings, slides, trikes, and other play equipment with their sponges.

For older children: Add different colors of food coloring to the water in several water basins. Provide large sheets of manila construction paper. Let children dip small sponges into the water and gently squeeze them out onto the paper.
Activity 5
Water Paintings
Invite children to create the greatest drawings on earth.

Grades: PreK–K

SKILLS: Children will engage in a group activity that encourages hand-eye coordination, creativity, and fun.

MATERIALS:
- water table or basin
- plastic containers with lids or large thermoses
- paintbrushes (medium and large)
- sponges of different shapes
- camera and album or poster board

IN ADVANCE: Tell families that children will be engaging in an outdoor water-play activity. Ask parents to send in a raincoat to keep their child dry. If you live in a warm climate, this activity can be done in bathing suits.

ACTIVITY
1 Explain to children that they will be engaging in an outdoor painting activity using water instead of paint. Tell them that they will wear special clothing to keep dry.
2 If you are going to be on the school playground, use a water table or basin for this activity. If you are taking children to a neighborhood playground, carry water in a large thermos or in several covered plastic containers. Remind them not to paint places where people sit, such as benches, swings, or sliding boards.
3 Ask children to put on their water clothing. Give each child a paintbrush and water. Can they draw on the ground with their water?
4 Ask children to watch how long their paintings remain on the ground before disappearing. Do they know why the water disappears? Engage older children in a discussion about evaporation. What happens when they paint in a sunny place? Does water remain longer in a shady area?
5 Give children sponges. Ask them to wet the sponges and squeeze them out on the ground. Then ask them to press the wet sponges on the ground. What happens?
6 Photograph children as they create their water paintings. Document the activity by putting the pictures in a book or on a poster that includes children's dictation or writings about the activity.

For younger children: Try drip painting with children. Invite them to soak their brushes in water and then shake them over the pavement or other surfaces where they are "painting."

For older children: Assign partners to children. Ask one child to sketch the water painting made by his or her partner as the other child works. Later, encourage children to share their sketches and descriptions with the group.

SPIN-OFF
Engage children in observational activities using water and different types of paper, such as black construction paper, oak tag, foil, wax paper, or tissue paper. Ask them to place each type of paper on the ground in direct sunlight. (They may need to place tape or small rocks on the edges to keep the paper flat.) Then, invite them to pour a small amount of water onto each piece of paper. What happens to each type of paper when it becomes wet? What happens as the water evaporates? Record children's observations.