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## EXPLORE WATER

**Component:** Math/Literacy, 21<sup>st</sup> Century Skills

**Time:** 45 minutes



**Goal:** To increase children's ability to describe the ways water looks and moves, and the ways to use tools to move water.

### Materials:

- Empty bin
- Plastic cups
- Soda bottles
- Funnel
- Sponge
- Pipettes or eyedroppers
- Empty soap dispensers
- Turkey baster

### Preparation (before the session):

1. Explore some of the materials on your own to get a preview of what the children will experience:
  - Fill up your bin with room-temperature water and gather some plastic cups, soda bottles, funnels, squirting tools such as a dish detergent bottle or recycled soap dispenser. Start with your hands. How many ways can you use your hands to move water? Talk about how it feels, what you see, and the different sounds it can make. When you do this activity with children, what size groups will work best? What kinds of indoor water rules do you want to set for the kids in general?
  - Fill a small cup with water. Then, pour the water into a big cup. Pour the water back and forth. What do you notice about the height of the water in the two cups? Try pouring the cupful of water into other bottles and containers. Can you guess how many cups of water it will take to fill various containers? Dunk bottles in water to fill them. What do you see and hear? How else can you fill the bottle?
  - Experiment with different ways to use a funnel. Can you use a funnel to carry water?



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- Try using a turkey baster, pumps, squirt bottles, and spray bottles. How far can you squirt water?
- Can you use the tools to make bubbles in water?

### *The Day of the Activity*

1. Just before your session, set up your water bins with all the supplies listed above except the water pumps and turkey basters. Add the pumps and basters after the youth have had time to explore the simple tools first.
2. Use tablecloths or newspaper under the table to catch spills.

### **Background:**

- This activity explores the following science concepts:
  - Water takes the shape of its container.
  - The same amount of water always fills the same container to the same height.
  - The same amount of water will fill containers of different sizes to different heights.
  - You can use lots of different objects to move water.
- Children will practice the following science skills:
  - Observe and describe how water looks and moves.
  - Classify the way different objects behave in water.
  - Do simple experiments.
  - Talk about cause and effect and share ideas.

### **Implementation Notes:**

- Here are some ideas for keeping your space dry:
  - Cover the floor beneath the water bin with plastic.
  - Put newspapers or towels on top.
  - Provide water smocks. (Garbage bags with holes for head and arms works well.)
  - Limit the number of children at the water table or station.
  - Set guidelines for splashing and squirting.
- Decide whether you want to use the water pumps and turkey basters in the opening activity. Depending on the maturity of your group, it might or might not work well. If you do include those tools help the kids practice using them before adding them to the water table.
- Always encourage the kids to talk about and share what they're doing and discovering.

### **Procedure:**

1. Engage and Connect—2 minutes: Begin by asking:
  - What are some times when you've gotten to play in and explore water?
  - What are some cool or interesting things you've discovered about water?

Explain that they are going to do several different hands-on activities to explore water. They will also have free time to just play on their own.

2. Introduction and Set Up—18 minutes: Divide the kids by groups of 5. Tell them they'll be taking turns doing activities at their water station. Invite the first group to sit by the water bin facing the group. Use this process:
  - Say something like:
    - Can you show us different ways to move our hands in the water?



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- Look, (child's name) is wriggling her fingers in the water. What is the water doing?
- (Child's name) can pick up water with his hands! What happens to the water?
- Invite the second group to the water station and give them small plastic cups and bottles or other containers. Say things like:
  - (Child's name), show us one thing you can do with the water and one cup.
  - (Child's name) and (child's name), what can you do with two cups and the water?
  - (Child's name), show us what you can do with the water and one bottle.
- Before starting the third group, introduce the funnels to the entire group by asking:
  - Has anyone ever seen this before? What's it called?
  - What makes a funnel special? How is it different from a cup?
  - Could you carry water in a funnel?
- Ask the third group to show ways to use the funnels.
- Tell the children that it's time to explore water with the tools they see. But before starting, the group needs to set up some rules so everybody gets to explore and they also keep themselves, other people, and room dry. Discuss rules for the water table and write them on a chart.
- Allow about 10 minutes for the kids to experiment freely with the water tools at the water station and find different ways to use them. Then introduce the focused water table activities below.

3. Exploration—20-30 minutes: Facilitate the following two activities. They should each take 10-15 minutes.

### **Big and Little Cups (Pour water from small cups into larger cups and containers)**

Make sure the following materials are at the water table: cups, containers, funnels of various shapes and sizes.

- Have the children pour water from a small cup into a larger cup or container. Help them notice what's happening by describing what you see. For example:
  - Wow, when you pour the little cup of water into the big cup, the water only goes up a little way.
- Have the kids measure and compare how much water fits into the cup. Ask questions:
  - How did you fill that big cup?
  - Does it take a lot of little cups to fill it? I wonder how many. Let's count!
  - How many of these little cups did it take to fill this big cup?
  - Suppose you find an even bigger cup (or container). How many little cups do you think it will take to fill up that very big cup? (Have the children make a new prediction. Then have them use the little cup to fill up the bigger cup. How close was their guess?)

### **From Here to There (Find ways to move water across the water table)**

Make sure the following materials are readily accessible at the water table: cups, containers, wide-mouth bottle, sponges, squirt bottles, pipettes or eyedroppers, water pumps, and turkey basters.



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- If you haven't already done so, introduce the water pumps and the turkey basters now. Help the children practice using them.
- After they've had some time to practice with the new tools, invite a small group to find as many ways as they can to move water from a container at one end of the water table to a wide-mouth bottle at the other end.
- Give one rule: You cannot pick up the water container! (Sample solution: Use a turkey baster to carry water from the container to the bottle.)
- Ask the teams to figure out ways to move water in the opposite direction from the bottle to the container.

**Reflection:** Bring a small tub of water and a selection of the water tools over to your discussion area. Process the series of activities by asking:

- What are some new things you discovered about water today?
- What happens to water when it's poured into a container? What kind of shapes does it take?
- What did you discover when you were exploring with the big and little cups? (What happens to a small cup of water when you pour it into a large cup? What happens if you pour that small cup of water into a soda bottle?)
- How did it go when you were guessing how many small cups it will take to fill up a big cup? How close was your guess?
- What are some different ways you were able to move water from one area to another? (Get some volunteers to demonstrate one way they were able to use water.)

**Going further:** Read the book, *Mr. Archimedes' Bath*, by Pamela Allen and, at various points in the story, and have the kids give explanations about what they think is happening with the water in the tub.

**SOURCE:** WGBH Educational Foundation, Peep and the Big Wide World, *Explore Water*, activities found on the [www.howtosmile.org](http://www.howtosmile.org) website.

**SKILL:** Scientific Exploration – water properties