



Drip Drop

Grades K-1



Overview

As a whole group, the class will observe the three forms of water (*solids, liquids & gases*). The students will explore water by dropping it on different kinds of materials. The students will have a water drop race with a partner.

Objectives

- To help students develop a better understanding of water
- To help students understand that some paper will absorb water while others will repel it

Materials

For presenter:

- a small frozen block of ice
- electric pot for boiling water to make steam
- 2 glasses - 1 filled with water
- medicine dropper
- plastic bag with samples of different materials (same as student's bag)
- 5 oz cup of water
- paper towels
- rolls of masking tape

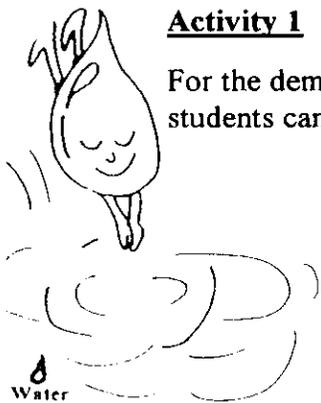
For each student

- medicine dropper
- 5 oz cup 1/3 full of water
- 1 plastic sandwich bag
- 3" x 3" pieces of each of the following: plastic, aluminum foil, toilet paper, velvet, wax paper, tissue, tissue paper, paper towel, thin card board
- 1 drinking straw
- One 11" x 16" piece of wax paper for the water drop race (1 piece for every two students)

Getting Ready

Activity 1

For the demonstration you will need to have water boiling in some type of container (so the students can see steam), a piece of ice, and two glasses, one filled with water.



Activity 2

Cut enough papers so that each child will have one of each kind. Each student should have a plastic bag with nine different pieces of paper in it. Fill the 5 oz paper cups 1/3 full of water and place them along with the bags of paper and medicine droppers on a table with easy access by the students.

Activity 3

Cut the wax paper in 11" x 16" pieces. You will also need to have rolls of masking tape to tape the paper on their desks and a drinking straw for each student.

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Procedures

Activity 1: The Forms of Water

Begin by telling the students that they will be doing some experiments with water. Use the questions below, to help get them interested and stimulate thinking.

Questions:

"What do you know about water? What is water like? What does it smell, taste, feel and sound like? What shape is water? Is water always a liquid?"

Show the children the container with boiling water. For safety reasons, children should be sitting in their desks for this demonstration. Make sure steam is coming out so they are able to see water in the form of a gas. Ask the students: "What do you see? Where does the steam or gas come from? Is steam one form of water?" Next, show them the two glasses. Pour the water from one glass to the other a couple of times. Ask the students: "What do you see? What form of water is this? How is it different than the gas? Could we turn this liquid into gas? How? Can we turn steam into water? How?" Some students may know the answers to these questions, other may not; it is not necessary that they understand this concept, the questions are used to stimulate thinking for those students who are at a higher level of understanding. "What is another form of water that I haven't shown you yet?" (*ice or solid*) Show them the block of ice. "How is it different from a liquid or a gas?" (*hard, frozen, white etc.*) "Could we turn it into a liquid or a gas? How?" At the end of the discussion hold up the ice, water and steam one more time and ask: "Are these all water?" (*yes*) "Are they in different forms?" (*yes*)

Activity 2: Water Drops and Paper

1. Show the students how to use a medicine dropper. Demonstrate dropping drips of water one at a time back into your cup. Tell the students that they will each get a cup of water and a dropper. The first thing you want them to do is practice dropping water back into the cup, one drop at a time. Tell them that they will need to be able to do this for the first experiment. Remind the students to be very careful to keep the water in their cups and droppers. The droppers are to be used only for the experiment.
2. Hand out a cup of water and a dropper to each student. Walk around and make sure they all are able to drop the water one drop at a time.
3. Have all students put down their droppers and look up at you. Show them the bag of papers and explain to them that they will be experimenting with paper to see what happens when you drop water on it. Tell them to take one piece of paper out at a time and place one drop of water on it. Watch to see what happens. Add another drop and see if the same things happens. Demonstrate with one piece of paper how you want them to do this.
4. Hand out the bags of paper. Move around the classroom and ask the children questions about what they are discovering. "What happened to the water drop? Did it soak into the paper?"
5. When they have had plenty of time to test all the papers, ask the students to put down their droppers
6. Begin by holding up your sample of the toilet paper, ask the students what they observed when they dropped water on it. When they respond that it soaked in, introduce to them the word **absorb** and write it on the chalkboard. Ask the students: "Did any other papers absorb water?" Have students show the other papers that absorbed water. Discuss with them what was different with each one when they put water on it. "What paper would be the best for mopping up water?"
7. Hold up the piece of plastic and ask what the students observed when they dropped water on it. They will probably say it rolled off - when they have given their explanation, introduce the word **repel** and write it on the chalkboard. Ask the students: "What other papers repelled water like the plastic? Can you think of things that are made from these materials? What makes it a good material for rainy weather? Which one of your samples could you cook in? Why?"
8. Tell the students to put all their papers in their plastic bags. Have one student bring around the garbage for collection.

Activity 3: Water Drop Race (You may want to save this activity for a follow up lesson another day.)

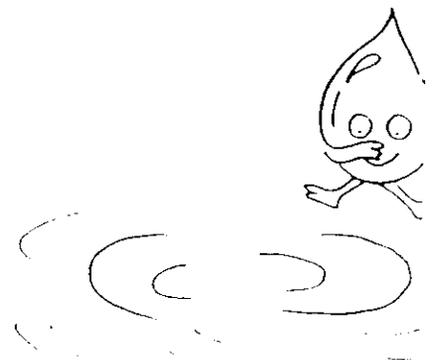
1. Before handing out the materials, demonstrate with another student how to have a water drop race. Take a piece of wax paper and tape it down to a desk. You and your partner each put one drop of water on the bottom edge of the paper. With a straw, you each blow on your drop to see who can get their whole drop to move to the top edge of the paper first.
2. Hand each pair of students a piece of paper, tape and two straws.
3. When they have their paper taped down, they can begin by each putting a drop on their paper.
4. Straws ready.....blow!!!!!!!!!!!!

Closure

Tell you neighbor two things you learned about water today. Choose a couple of students to share with the whole class what they learned.

Clean Up

Have each pair of students throw away their garbage, pour their cups of water in the sink and wipe off their desk with paper towel.



All Mixed Up

Grades K-1



Overview

The students will take turns mixing water with oil, powder, food coloring, milk, and dishwashing soap. The students will experiment with water, baking soda, vinegar, and popcorn kernels.

Objective

- To help students understand that some things mix with water and others do not
- Let students observe what happens when you mix water with a number of different substances

Materials

For presenter:

- vegetable oil
- heavy syrup
- water
- 1 qt. jar
- a cork, one grape, one plastic building block (Lego)
- baby powder
- a few popcorn kernels
- 1/2 cup milk
- dishwashing liquid
- Ten - 16 oz. clear plastic glasses for mixing
- several large spoons for mixing
- paper towel

For each student:

- One-12 oz clear plastic glass
- 3 tbs. of vinegar
- 1 plastic spoon for mixing

For each group of 4-6 students

- 1 container with about 8 tbs. of baking powder
- 1 container with about 1/4 cup popcorn kernels
- 1 container with 6 cups of water
- One - 1 cup measuring cup
- paper towels (for spills)

Getting Ready

Activity 1

The whole group activities need to be set up in an area where all the students can see. You will need a table or desk to set all your materials on and a place for two students at a time to come up and demonstrate for the class. Fill all the 16 oz glasses about 2/3 full of water.

Activity 2

Put 3 tbs. of vinegar in all of the 12 oz clear plastic glasses. Each student will need a glass with vinegar, a spoon, access to baking powder, popcorn, water and paper towel. These items should be ready and on a table for easy access by students and presenter.

Procedures

Activity 1: - Whole Group Mixing Activity

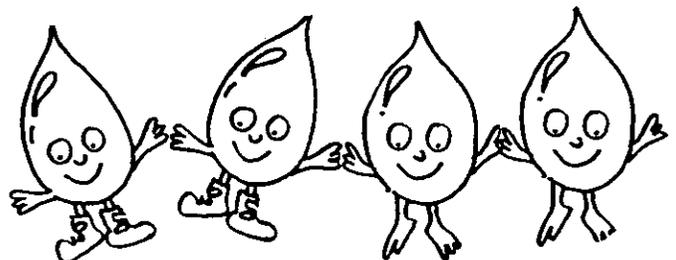
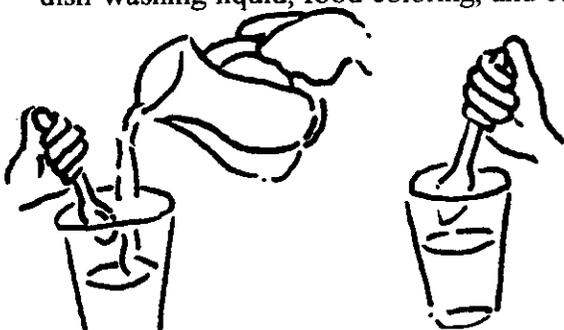
Begin by telling the students that today they are going to do some experiments to find out what happens when you mix things with water. Use the questions below to start the students thinking and spark their interest.

Questions

“Have you ever mixed anything with water? What happened?” Give the students time to share what they know. If anyone uses the word *dissolve*, write it on the board where you can refer to it later. “Have you ever tried to mix something with water and it would not mix? What happened?”

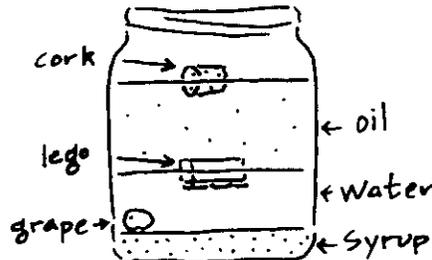
After a short discussion of mixing, tell the students you will be asking for volunteers to do experiments for the class. Show them that the experiments are set up in an area where they all will be able to see. Let them know that if they are not able to do one of these experiments that everyone will be able to do an experiment at their desk later.

For each experiment, have two students come to the front of the class. Give each one of them a glass filled with water and the substance you want them to mix with the water. It will probably work better if you pour the things into the glasses for the students and then they can do the mixing. Have the student hold the glass in one hand, while mixing with the other, so the other students can see what is happening in the glasses. As the two students are mixing, ask the class: “What is happening? Is it mixing with the water? Did it dissolve in the water? What does dissolve mean?” If you have not already done so, write the word *dissolve* on the chalkboard. Choose new students to do the other experiments. This way more students are able to be involved. Follow the same procedure for each of the following mixtures: vegetable oil, milk, dish-washing liquid, food coloring, and baby powder.



Activity 2: Showing Liquid Levels

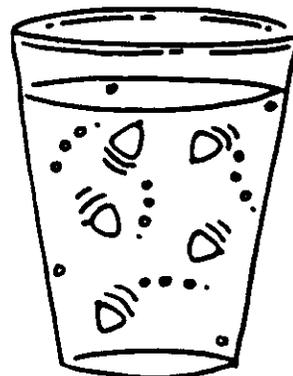
Tell the students: "We discovered that when you pour liquids together, they do not always mix. Certain liquids float on others. What happened when we mixed oil with water? (*oil floated*) I am going to show you an experiment to see if we can get other liquids to float." Hold up the 1 qt. jar and pour about 2 inches of syrup in the bottom. Ask the students: "Do you think syrup is heavy or light?" Next pour the same amount of oil on top. Ask the students: "What happened? Do you know why? (*oil stays on top because it is lighter*) Next I am going to pour in water." Before you do, ask them what they think will happen (*oil will float on the water*). Why? Pour in the same amount of water as oil and syrup. Ask the students: "What is happening? Were you right in your guess?" Tell them that you are going to put a grape, a Lego and a cork in the jar. Ask the students: "What do you think will happen?" Put in the grape. It should sink down and float on the syrup. Put in the Lego, it should sink down in the water and float. Put in the cork, it should float on the oil. Ask the students: "Why did the grape sink? Why didn't the Lego sink like the grape? Why is the cork floating on top? How is the cork different from the grape and the Lego? (*it weighs less*)"



Activity 3: Dancing Popcorn

Hold up a glass of water and drop in 5 popcorn kernels. Ask the students: "What did the popcorn do when we mixed it with water? (*it sank to the bottom*)" Tell them that they are going to try mixing things with water and see what happens to the popcorn.

Before handing out any materials, show the students the materials they will get and what they are going to do with them. Explain that there is vinegar in the glass, and baking soda, water and popcorn kernels in the containers. Tell students that each of their groups will have containers of baking soda, popcorn kernels and water to share. Explain that you will all do the experiment at the same time, so they are not to touch any materials until you give the directions. Have one member of each group come up and get the containers, spoons and measuring cups for their group. You can hand out the water and pass out the glasses of vinegar. You will need these same materials to demonstrate each of the steps. Have the students repeat what you do one step at a time. Wait until everyone has completed the first step, before moving on to the second, etc. Many children are not able to follow more than one direction at once. Remind students that they will have to take turns with the materials.



1. Pour 1 measuring cup of water into your glass.
2. Add 5 kernels of popcorn.
3. Add 3 spoonfuls of baking powder.
4. Stir.
5. Watch what happens.

Discussion

The popcorn kernels should move up and down in the glass. This is caused by a chemical reaction between vinegar and baking powder. Ask the students: "What is happening? Why? How is this experiment different from the water and popcorn I showed you at first?"

Closure:

Ask the students: "What did you learn about water today? What does the word *dissolve* mean? Do all things dissolve in water?"

Clean Up

Have the children pour their solutions back into the container of water. While you collect the containers have the students throw away their garbage and wipe off their desks.



On the Move

Grades K-1

Overview

As a whole group, the students will observe what happens when you put colored hot water into cold water. Individually, they will experiment with dropping water on coffee filters that have been colored with water color markers. They will observe the separating of colors on the filter. The filters can be used for an art project the next day.

Objective

- To help students understand how water causes things to move

Materials

For the presenter:

- a wide mouth glass gallon jar (clear)
- small glass bottle with a neck (clear)
- blue & green food coloring
- hot water
- cold water
- string



For each group of 5 students:

- 3 black water color marking pens
- 1 each: brown, green, orange, & purple water color marking pens
- 25 coffee filters
- 5 water droppers
- small container of water
- paper towels for spills
- 5 pieces of newspaper - large enough to dry 5 coffee filters on each

Getting Ready

Activity 1

The whole group activity should be set up in an area where all the students can see. Fill the gallon jar with cold water and the small bottle with **hot** water that has blue and green food coloring added to it. Tie a string around the neck of the bottle.

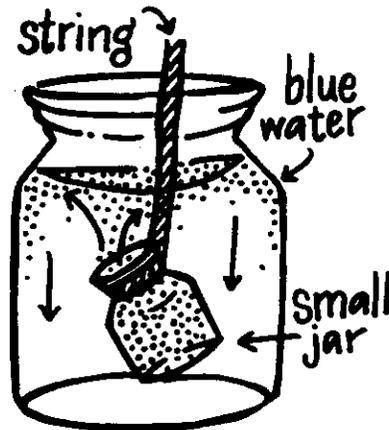
Activity 2

Have the markers, coffee filters and droppers divided into the number of student groups you have. Everything each group will need should be placed together on the table (coffee filters counted out, etc.) You will need space for the students to lay out their newspapers, with the filters, to dry.

Procedures

Begin by telling the student that today they are going to do some experiments to find out what happens when you use water to make another liquid move. Use the questions by each activity to start the students thinking and spark their interest.

Activity 1: Hot Water Hole



Questions

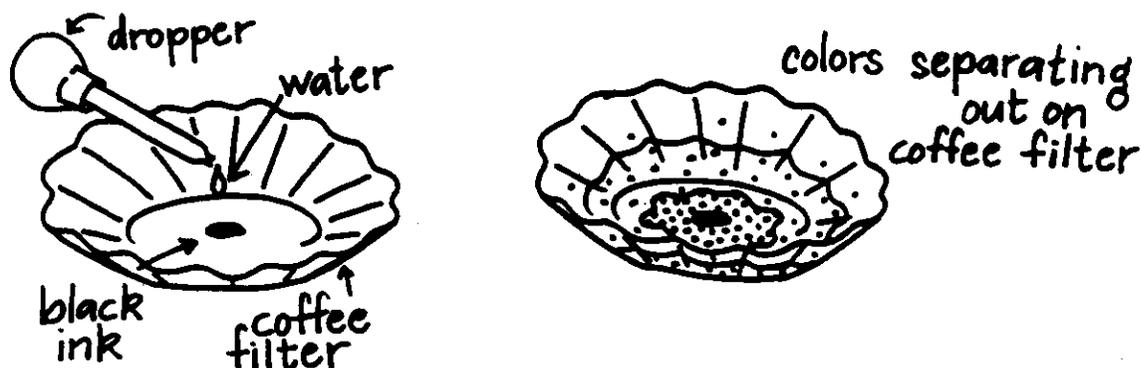
“Have you ever had a bowl of hot soup? Did you ever wonder why the soup on top tasted so much hotter than the soup below? Did you know that one kind of water will float on top of another? Do you have any idea what it might be? To find out, we will make a Hot Water Hole.” As you demonstrate this experiment, discuss with the students what you are doing and ask questions about what they observe and why it might be happening.

1. Attach a string around the neck of a small bottle.
2. Pour cold water into the jar about 2/3 full.
3. Fill the small jar with hot water and quickly add a few drops of blue or green food coloring so it will be a dark color.
4. Place the small bottle at the bottom of the jar with cold water, using the string to lower it down.

Discussion

Observe that the blue water rises to the top of the jar forming a blue-green layer on top. When water is heated, it expands and rises. Continue to watch, notice as the water starts to cool, the blue-green water starts to move down and mix with the cold water. End this experiment with the question: “What did you learn from this experiment?”

Activity 2: Separating Colors



Hold up a black marking pen. Ask the students: “Is black really black? How much do you know about colors? What does water do to ink? Let's try this experiment and find out.”

Before handing out any materials show the students the materials they will get and explain what they will be doing. Explain that they will each get a filter and a dropper. Each group will have 3 black markers and a cup of water to share. Explain that you will all do the experiment at the same time and they are not to touch the materials until you give the directions. Have two students from each group come up and get the container of water, 3 black markers and enough droppers and filters for each member of their group. You will also need these materials for the demonstration. Have the students repeat what you do, one step at a time. Wait until everyone has completed the first step before moving on to the second, etc. Many children are not able to follow more than one direction at once. Remind the students that they will have to take turns with the pens.

1. Take a filter and make a small black circle in the middle with a black marking pen about as big as the top of your thumb.
2. Take your dropper and drop one drip of water on the filter.
3. Watch to see what happens.
4. Try adding one or two more drops to the filter.

You will notice that the ink starts spreading out and colors start appearing. The water separates the ink into the different colors that make it up. Ask the students: “What is happening to the black ink? What colors do you see appearing? What does this tell you about the color black? How did water make the ink move? Do you think the same thing would happen if we used a different color? Let's experiment and see.”

5. Pass out orange, green, purple, and brown markers to each group. Give each group enough filters so the students can experiment with the other colors to see the effect water has on them. As you are moving around the classroom, ask the students what they are observing and why it is happening. Have the children put their names on a piece of newspaper and place their filters on them to dry.¹

¹ Filters may be used later to make butterflies with clothes pins.

Closure

Ask each child to hold up their favorite color pattern. Ask them to tell their neighbor what they learned from this experiment. Call on a couple of students to share with the class what they learned.

Clean Up

Collect markers and droppers. Have the students lay their newspaper and filters in a place to dry, throw away any garbage, and wipe off tables.