

Drop in the Bucket Activity (about 20 min. + discussion)

Purpose of activity is to teach kids that:

- Water is a finite and precious resource
- New water cannot be made or created
- Water conservation is a habit we should all try to develop
- We can make a difference if we all try to conserve water

Introduction:

Tell the kids that they will be learning about the world's water supply and how water is distributed around the world and why water conservation is something we should all practice.

To start, fill the 1000 ml beaker with water. Add a drop or two of blue coloring. Stir with straw. Tell the kids that for this activity, the 1000 ml represents all the water in the world. Tell them to keep this in mind as they go through the activity.

Ask if anyone knows what the two basic types of water are that make up all the water on our planet – **we are looking for salt water and fresh water.**

Tell them that the next activity is designed to give them a better idea of how much fresh and salt water is available on planet Earth.

Have the kids break up into 3-6 groups, depending on the size of the entire group. Give each group the water grid page, the one with 100 squares, 3 different colored markers and a pencil. Tell them to estimate how much of the world's water is fresh and how much is salt water and have them color the sheet accordingly.

When all the groups have completed their grid pages ask them to show their work and explain how they arrived at their conclusion. Tell them that the actual distribution is about 97% salt water and around 3% fresh water. Explain that while 3% of the planet's water not all of it is available to humans to use.

Optional: Toss the globe around and have the kids look at it, noting that the clear areas are water. Ask them to remember what their initial estimate of fresh/salt water was.

Pour 30 ml from the large beaker into the 100 ml beaker.

Ask them which beaker they think represents salt water and which represents fresh water, remembering what they did in the first exercise.

Tell them the large beaker is salt water and the small one is fresh. Here you can ask them if the total water supply is 1000ml and 970 is salt and 30 is fresh, what percentage is fresh and what is salt (3% fresh, 97% salt).

Have them take a third colored marker and fill in how much of the fresh water is readily available for human use

Take the beaker with 30 ml in it and ask the students how much of the 30 ml is available to humans. Pour 6 ml from the 30 ml beaker into the small beaker. Tell them that this is how much is actually available for humans to use.

Discussion: Ask the group that if there is 30 ml (What percentage would that be?) of fresh water and only 6ml (again ask if anyone knows what percentage that is -6/10ths) that is available for use, where is the remaining 24 ml, or 2.4%? Keep the discussion going until someone comes up with the right answer, within reason. If it is taking a long time give some hints like think up, or north or cold or something along those lines. Explain that the 24 ml represents the water frozen in glaciers and ice caps – might ask if anyone knows the difference between the two; glaciers are formed in sheets on the surface, ice caps are in the mountains above the snow line.

Hold up the small beaker with 6 ml of water in it. Ask them how much of this amount is potable (ask if anyone knows what potable means – drinkable, for human use) water.

Ask them to list ways we use potable water. Can be used as a time filler or leave out if you are running out of time.

Take the eye dropper and draw a small amount of water into it. Ask a student to squeeze ONE drop into the can. Ask everyone to be quiet and listen to the water hit. That one drop represents all the water on earth that is available for us to use for everything that we use water for. Discussion: Why is there so little of the 6ml of water that is potable? What happened to the rest of it? About 1.5 ml is surface water, the remaining water is ground water.

Most of this is either so far underground, trapped in the soil or polluted, making it unfit for human use. The drop represents .003 ml of available **AND** potable fresh water. 95% of Missouri freshwater or drinking water comes from the groundwater.

Have them review the estimates of usable water (the third color on the sheet) they made at the start of the session. Ask them: now that you know that clean safe water is a very small percentage of the world's water, what should we all try to practice? – water conservation? Another question you can ask is if they think there is more, less of the same amount of water on the planet as there was 500 or 1000 years ago. Explain that water, like matter cannot be created or destroyed, only made unusable. Ask if anyone knows what the process is called that describes how water moves through our environment (water or hydrological cycle). Explain that the same water continues to move through our environment and that how usable it remains is up to us. Can also ask them to name some things they can do to help conserve water and cut down on pollution. If you really need to fill some time you might ask if anyone knows what KARST topography is and how it's related to water quality, also septic systems.

Remind them that water is a limited and finite resource and that we all have to do what we can to make sure everyone has the clean water they need for a healthy life.

Suggestions that can be made to conserve water:

Turn water off when brushing teeth as well as between soaps & rinses when hand washing

Take showers instead of baths & limit shower time to 5-10 minutes.

Keep a bottle of tap water in the fridge for drinking instead of running the water till it becomes cool.

Only run the dishwasher or washing machine when full.

Use a broom instead of a hose to sweep sidewalks & driveways.

When washing the care use a hose with and on/off nozzle or use buckets of rinse water (from the rain barrel ☺)

Fix leaks

Install a low-flow showerhead.

If you have to water a lawn, only do it in the morning or evening when water will not evaporate as quickly. Also don't accidentally water the sidewalk. Ideally collect rain water to water the lawn or let grass go dormant.

Can talk about how much water it takes to make items:

- A pair of cotton jeans.....1,800 gallons**
- 2-pound loaf of bread.....1,000 gallons**
- A pound of hamburger.....4,000 gallons**
- A 12-oz soda.....16.5 gallons**
- The ton of finished steel used to make a car...32,000 gallons**
- 40 sheets of paper.....100 gallons**