

1. "WHAT FLOATS AND WHAT DROWNS?"

We put various objects into the bowl with water: pencil, stone, coin, nail, sand, paper clip, key, cork, magnet, plastic block.

We observe and record what is happening with these objects, drawing conclusions.

Next, the children throw in: crumbled styrofoam, walnut shells, a feather, a ping-pong ball, a piece of wood, paper and other light objects - noting what happens to these objects and why they behave like that?

EXPLANATION:

After the experiment, the children exchange items that floated on the water, ie: a pencil, a wooden block, a plastic block, a ping-pong ball, a piece of Styrofoam, and from which raw materials were made: wood, plastic, styrofoam. They know that these items float because they are made of such materials, and sank metal objects: a coin, a nail and a magnet. The size of the item does not affect whether it floats or sinks; a large piece of Styrofoam was swimming, a small coin drowned.

- Then students throw a plasticine ball - students observe what is happening to it, and then the same plasticine flatten (create a boat from it) and put it on the water - plasticine does not sink. Students draw conclusions as to why this is happening.
- Finally, the pupils grab the needle using tweezers and hold it horizontally. Very slowly and carefully place the needle on the water (the needle must be ideally horizontal, if one end of it submerges in water - sinks). The needle does not sink, just floats on the surface. Why?

EXPLANATION: A kind of elastic membrane, thin is formed on the water surface. This is because of the water molecules at the surface there is a force called surface tension.

2. "MAGIC POTATO"

Each student himself prepares a salt solution in one of two glasses and one puts a potato patch in it. The student notes that in a glass with salt potato it floats, and it sinks in the water itself.

Lessons from experience - true or false.

1. In salt water, a potato floats? (truth)
2. In the water without salt, the potato sinks? (truth)

EXPLANATION

Liquids - liquid substances have different weights, despite the same volume. Saltwater (seas and oceans) has a heavier weight than freshwater (rivers and lakes). Everything is swimming better in salt water.

3. "ADHESIVE FROM THE WATER"

You will need: 2 flat pieces of glass (e.g. for a microscope, mirrors without frames, etc.), water

1. Apply a few drops of water on one slide and place the second slide on it.
2. Try to separate both slides.

It really takes a lot of effort to separate the two slides. Why?

EXPLANATION: Large forces of attraction exist between the particles of glass and water, called adhesive forces. Therefore, the water runs down the glass slowly, and, for example, a grain of sand will adhere to the glass at all.

4. WHAT WATER (SWEET) IS IN THE WORLD?

Prepare a bucket, a bowl or a large carboy with 13 liters of water. Place the container next to it with a marked capacity of approx. 273 ml (more than a glass) and another with a marked capacity of 125 ml (about half a cup). In addition, prepare a small spoon (e.g. from syrup) or a dropper. Draw a marked amount of water into the dishes, take a few drops (about 1.2 ml) on the teaspoon. Inform the players that the container has a capacity 13 liters symbolizes the total water resources of the Earth. The players' task is to match the signatures to the containers. Cards with signatures are on the players' hands. The task of the group is to assign places to specific containers.

TASK SOLUTION:

large container (about 12.4 l) - saltwater in seas and oceans

container approx. 273 ml - fresh water in glaciers and ice cover

container approx. 125 ml - groundwater

1/5 teaspoon (about 1.2 ml) - surface waters of lakes, rivers and wetlands, which are the primary source water in the daily life of a human being

Scoring: For each correct match to the container, the team gets a point.

REQUIRED MATERIALS:

- a large container holding 13 liters of water and two transparent cups or jars of approx. 300 ml and 150 ml, a teaspoon (optionally a syringe or pipette)

- cards with graphics depicting individual places where the Earth's water resources are located

5. ACCESS TO WATER

Teams receive water drops cut from paper symbolizing the amount of drinking water per one inhabitant (15 liters, 150 liters, 350 liters). Then, players draw one country from three different containers (eg boxes, cup). The task of the team is to find these countries on the political map of the world and put on them a drop of water, which represents the amount of liters of drinking water per day per one inhabitant of a given country. Instructions for the task are given by the oral guardian / the point keeper and checks if it has been done correctly.

List of countries:

15 liters - Ethiopia, Haiti, Cambodia, Uganda

150 liters - Philippines, India, Peru, Poland

350 liters - Spain, Japan, Mexico, Italy

Scoring: For each correctly assigned country the team gets a point. An additional point can be obtained for the correct indication of the state on the map.

Note: You can also choose not to indicate countries on the map

and limit yourself to matching the right drops of water to specific countries.

In another variant, you can use only cards with flags without country names.

REQUIRED MATERIALS:

- water drops cut from paper symbolizing the amount of drinking water per capita (Appendix 2)

- political map of the world (optional)

- cards with country names (Annex No. 3)

- three card containers with country names

6. CAUSES AND EFFECTS OF LACK OF WATER

The task is about writing out the causes and consequences of the lack of access to water. Place two

categories on a large sheet of paper (e.g. paper):

Causes and effects. The team gets from the station's guardian for two cards in two different colors. One color symbolizes the causes and the other the effects of the lack of access to water. On the pages, the group enters their proposals (one per sheet) and glues on a large sheet of paper in the appropriate category. It is important that the proposals of subsequent groups are not repeated.

Note: Be sure to enter a time limit for the task, in this case it can be 3-5 minutes. This task can also be prepared for two positions, for one student have to give reasons, and on the other the effects of lack of access to water.

Note: This problem representation scheme can be used for tasks that cover a wide range of topics, for example, to ask for the causes and effects of a flood.

Scoring: We can award points / points for each proposal or score only if the group gives two proposals in a given category.

REQUIRED MATERIALS:

- a large sheet of wrapping paper
- small cards (so-called Post-ity) in two colors
- something to write for a group (pencil, pen)

7. **WHERE DOES FISH LIVE? (FRESHWATER AND SEA FISH)**

The group's task is to divide the fish according to the environment in which they live (on freshwater and marine).

Solution of the task:

sea fish - cod, halibut, mackerel, sole, pollock, salmon, sprat, herring, flounder, belona

freshwater fish - pike, perch, catfish, zander, whitefish, tench, bream, crucian carp, silver carp, roach

Scoring: For each correct match of the fish to the waters in which it occurs, the group gets a point. You can also give negative points for incorrect matches.

REQUIRED MATERIALS:

- cards with the inscription MORZE, RZEKA / LAKE
- cards with fish names

8. **WHAT DO WE WATER USE FOR?**

The station's guardian informs the players that each of us in Poland consumes an average of 150 liters of water a day. Then he gives the groups a piece of paper with 100 half-liter bottles printed on it and written out the most important activities for which we use water. The task is to cut and match the right amount of bottles for a specific activity.

Solution of the task: food and drink - 3, bath - 37, washing hands and face - 7, cleaning - 5, laundry - 17, washing the dishes - 5, flushing the toilet - 21, others (eg watering flowers) - 5

Scoring: Points can be awarded for each correct matching of the number of bottles to a particular activity.

REQUIRED MATERIALS:

- a card with printed bottles
- cards with printed symbols of sample activities
- one half-liter bottle (optional)