

Lesson Plan (1-4 class)

Lesson Title:

General theme: We protect the environment.

Detailed topic: Water - a treasure that we must save! (2 hours)

Objectives:

- understanding the importance of water for life on Earth,
- familiarization with the three states of aggregation of water,
- learning about the water cycle in nature,
- awareness of where water pollution comes from,
- planning your own action to reduce water consumption
- performing experiments and arousing interest in their results,
- drawing and formulating conclusions from the conducted experiments,

Materials Needed:

- ice cubes,
- glass dishes: bowls, jars, glasses,
- cold and hot water,
- dryer,
- wipes,
- Electric Kettle,
- pictures with states of water in nature,
- diagram of water circulation in nature,
- clean and dirty water (plastic bottle, cotton balls, fine sand, gravel, pebbles),
- oil,
- feather,
- pictures of water pollution,
- scheme of the sewage treatment plant,
- photos with ways to purify water / waste water,
- photos of droughts and floods,
- flashcards to play about drought and flood,
- Bristol board, crayons, strings to make badges.

Outline of the lesson:

1. Presentation of the topic of the lesson.

What will we talk about today? This riddle will explain it to you:

It is used for drinking

It is used for washing.

It wouldn't be without her

Life on Earth...

2. Observation of the states of aggregation of water - three stations.

Does water always look the same?

I - ICE

Students determine the properties of ice by observing each experiment and answering the following questions:

- What color is the ice? (white, transparent).
- What is its touch surface? (slippery, smooth).
- Is it easy to break? (a thin piece of ice is brittle, a thick one is hard).
- Can you determine its shape? (ice from a plate has a different shape, another from a cup and another from a sand mold).
- What is ice made of?
- And now, when we put the ice into different vessels - its appearance, the shape of the ice pieces changes? (no).

So can we make a conclusion?

Ice is a solid.

- Do you know at what temperature ice starts to melt?
- When ice melts, what is formed? (water).
- Let's check where the ice melts faster - in a warm or cooler place.

I put the same amount of ice cubes in 2 glasses.

One with cold water, the other with hot. In a moment we will see which of them melted faster.

- We will now throw ice cubes into the water. What happens to the ice? Do they sink to the bottom? (no, they float on the surface of the water).
- Why does ice float on the surface of water? (because it's lighter).
- What are the effects of this phenomenon in nature? (in the spring the floes float on the rivers).

Ice melts at 0°C. The hotter it is, the faster it melts. Ice is lighter than water.

II - WATER

- What color is it? (it is transparent).
- And where does the blue color of the water in the body of water come from? (from the reflection of the color of the sky).
- Can you determine the shape of water? – students pour water into vessels of various shapes (no – it changes with the shape of the vessel into which it is poured).
- Recording applications on the board:

Water is a fluid. It overflows. We say that water is liquid-liquid.

- How much water do we drink a day?
- In what form do we drink it? (soups, tea, juices, mineral water)
- Dividing water into carbonated and non-carbonated.

III - WATER STEAM

- Let's check what determines the rate of evaporation of water. I have two tissues that I will wet with water and then squeeze a little. I will unfold one of them and leave the other crumpled. We'll both be drying for a while. Which dries faster?

Items that have a larger evaporation surface dry faster.

- And when the water in the puddle dries up earlier - in summer, when it's hot, or in autumn or spring? (in summer).

Water evaporates faster when it's warmer.

- Evaporation can be accelerated by heating the water.
- At what temperature does water boil or boil? (100°C).
- Look at the spout of the jug of boiling water. Is air visible just above the spout of the jug? (no).

This invisible layer of air is water vapor.

Water vapor is a gaseous form of water, i.e. a gaseous state of aggregation.

- Let's put the mirror to the spout of the water jug. A mist appears on the mirror, then drops of water. Liquid water vapor turns into water.
- What does the state of aggregation of water depend on?

The state of aggregation of water depends on the ambient temperature.

3. Conversation, where in nature do we meet the known states of aggregation of water? You can use charts, pictures, photos.

Ice:

- In winter on ponds, rivers, puddles.
- Snowfall.
- Fridge in the house.

Indication on the world map and globe of the areas of ice and perpetual snow.

Water:

- Precipitation - rain.
 - Rivers, lakes, seas, oceans.
- Find on the map and name the waters surrounding the continents on Earth.

Steam:

- Clouds, fogs.

Evaporation from water bodies, soil, plants.

- Laundry drying.

4. Explanation of the phenomenon of water circulation in nature.

The water cycle has no starting point, but we can trace the entire cycle starting with the ocean. (you can use the Water Circulation scheme in nature or use YouTube
E.g. <https://www.youtube.com/watch?v=4Pcvil1sVJ8>

5. Water resources in the world

Presentation to children in the form of a diagram or drawing of fresh and salt water resources in the world. Making them aware that there is very little fresh water, and some

of it is hidden underground, locked in glaciers and polluted. In fact, there is very little drinking water. Who needs water to live?

I also recommend the movie https://www.youtube.com/watch?v=0rVHgqx3a_0

6. What pollutes the water?

Research activity

We show the children 2 glasses filled with water (one clean, the other contaminated). They wonder which water they would like to drink. They determine which is clean and which is dirty.

Can you clean dirty water? If so, in what way?

Making water filters with children or an experiment demonstration.

<https://www.youtube.com/watch?v=zatcpQt6nmA>

or

<https://www.youtube.com/watch?v=tODmZ3zUf0k>

You can also do an experiment with water and oil.

Pour the oil into the water, then dip the feather in it

Pour the oil into the water and mix. Oil does not dissolve in water, it forms oily stain on the surface of water because it is lighter than water.

Dip one feather, after taking it out of the water, examine it and compare it with a dry feather. Notice that the feather is glued together. It is worth adding (although it is difficult for a child to notice) that a wet feather is heavier than before dipping.

The oil stain in the experiment is an oil stain in reality, which appears in water reservoirs as a result of errors in the process of exploiting oil deposits on the seabed. Such a simple experiment shows what also happens to birds that come across such oil spills. They cannot fly because they become too heavy and their feathers stick together. In addition, the oily stain is impermeable to light and air. Marine animals are deprived of the ability to take up oxygen, and plant photosynthesis is greatly reduced hampered, thus dooming underwater organisms to extinction.

Guided conversation using photos, drawings, etc.

- sewage from households,
- sewage from factories,
- chemical detergents,
- petroleum substances,
- chemical detergents.

Optionally, you can also show children a diagram or picture of the sewage treatment plant and discuss the tasks of the sewage treatment plant.

7. How to save water?

We got to the main question. If water is so important, how can we conserve it?

There are plenty of ways to do that.

The photos are matched in pairs; children should point out which picture shows an economical way to use water and which doesn't. The photos include, for example: the

faucet turned on and off while brushing teeth; washing dishes by hand and in the dishwasher; bathing in the bathtub and shower; a dripping tap and a tightly closed tap; rainwater collected to the collector and rain that falls directly on the pavement.

8. Droughts and floods

Progressive climate change means that weather phenomena such as drought or flood appear more and more often in different parts of the world. In Poland, the Czech Republic and Slovakia, dry years have always occurred. Usually, however, they appeared every 5-10 years. Currently, droughts occur every 2 years, causing agricultural losses, forest fires and reduced water intake in some localities. Amazingly, the amount of water falling per square meter over the course of a year has not changed much. However, the type of precipitation has changed. Once in spring, the soil was moistened by melting snow. The rainfall was even and the soil was able to absorb the water. Currently, heavy rains are falling more often, causing flooding or local flooding. (photos of drought and flood)

As part of the game, we want children to be able to name the characteristics of floods and droughts.

We give each child attachments with a table and flashcards. Children cut out rectangles with cards showing the impact of drought and flood on people's lives and plant growth. We will ask all children to divide the flashcards into two groups: flood and drought. In each category, children will find 5 cards. After completing individual work, we will ask selected children to tell where they put the flashcards. In the case of non-reading groups, we read the descriptions of the flashcards aloud and immediately ask the question to which category the flashcard belongs. After discussing the flashcards, the children stick the cards to the appropriate columns of the table.

Summary

Finally, it's time to sum up. What did the children learn? Will they be more careful with water? What idea do they have for saving it?

Children cut out circle-shaped templates and punch a hole near the edge (for string). They cut a string of sufficient length and thread it through the buttonhole in the badge. Children must first think about how they would like and will be able to save water on a daily basis. They draw it on the badge.

Finally, we explain to the children that they have become protectors of the water, a the medal with their drawing symbolizes the commitment to care for uss the most precious treasure that it is water!