



GOIZEKO IZARRA IKASTOLA

PRESENTATION OF THE  
WATER ACTIVITIES

2nd JOINT STAFF MEETING IN  
FINLAND  
MARCH 22nd- MARCH 26th



## JOINT ACTIVITY: WATER CYCLE IN A BAG



## WATER CYCLE IN A BAG

The amount of water on Earth is limited. But we use so much water everyday. How have we not run out of water yet? That is thanks to the 'Water Cycle'. First we activated pupils previous knowledge by prompting questions:

What are some places where you can find water? E.g. lake, swimming pool, etc.

What do we use water for?

Pupils prepared the bags following the instructions and then they talked about what they think it will happen.

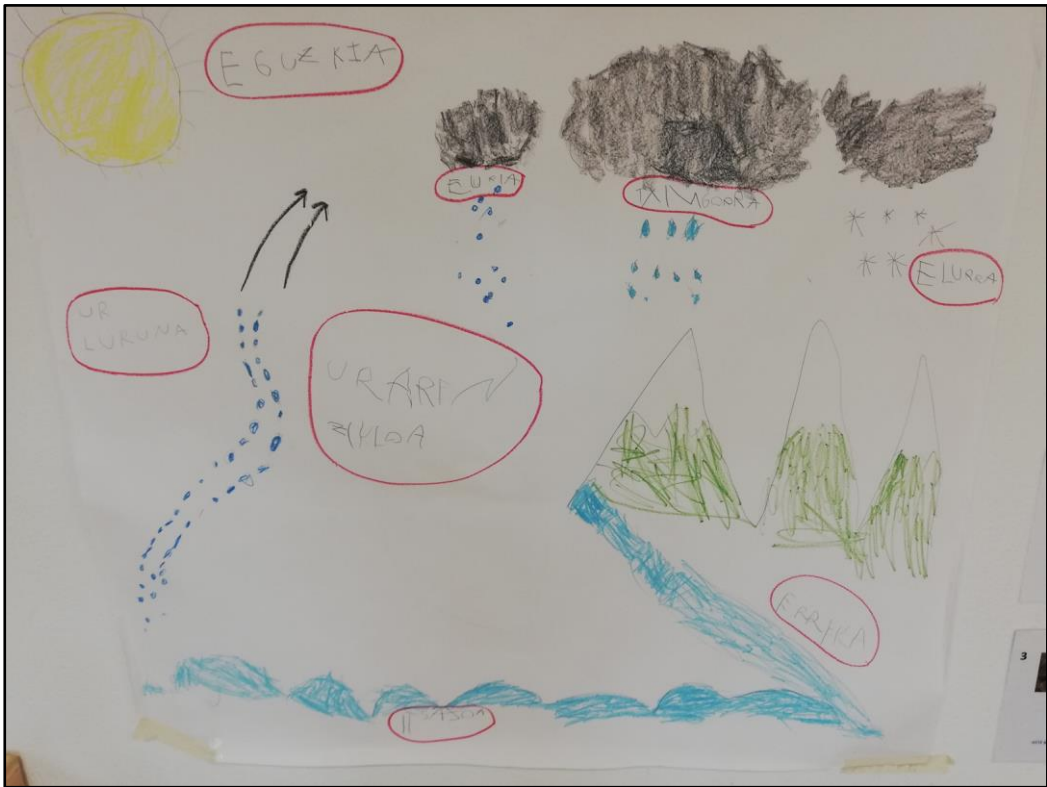


Next days they monitored the bags and answer some questions:

- Are there any differences between the bag in the first day and now?
- What processes of the water cycle did you see in this activity?
- Did the water escape from the bag?
- Why do you think this activity is called “water cycle in a bag”?

Label the bags using the water cycle words: Evaporation, condensation, Precipitation, Accumulation.



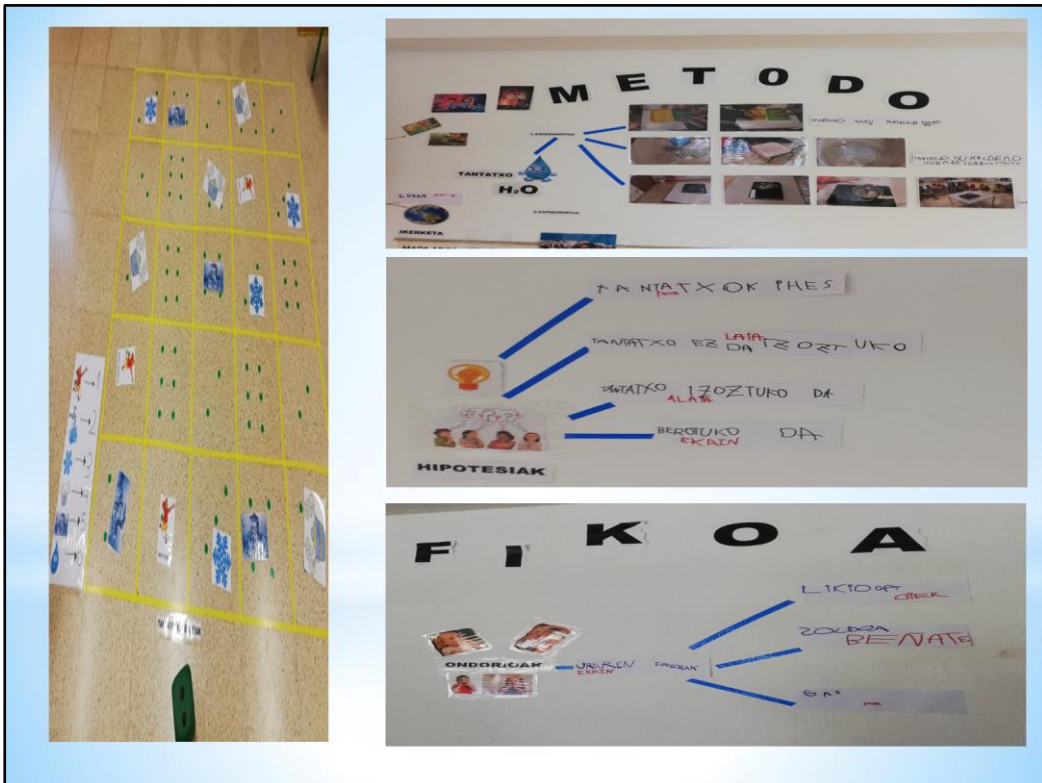


**4 -YEAR-OLDS: STATES OF WATER**



**4 YEAR-OLDS: STATES OF WATER**

**4 years old pupils experienced with the 3 states of water: liquid, solid and gas.**



- **They described the experiment:**
  - Little droplets run between my fingers.
  - Little droplet in the fridge.
  - Little droplet heating up in the sauce pan.
- **They made hypothesis :**
  - Little droplet will escape.
  - Little droplet will not freeze.
  - Little droplet will freeze.
  - Little droplet will heat up.
- **They drew conclusions:**
- **They played a board game on the floor.**

## 4 YEAR-OLDS: WATER CYCLE



## 4 YEAR-OLDS: WATER CYCLE

- To learn about the water cycle they used two books: 'What makes it rain?' and 'errekastoa'





- They built a diorama and they prompted suggestions to conserve water:
  - The toilet is not a rubbish bin.
  - We have to take care of Nature.
  - Don't waste paper.
  - Don't throw paper to the rivers.
  - Don't waste water.

**5 –YEAR-OLDS:  
GERMINATING  
SEEDS IN WATER**



**5 YEAR-OLDS: GERMINATING SEEDS IN WATER:**

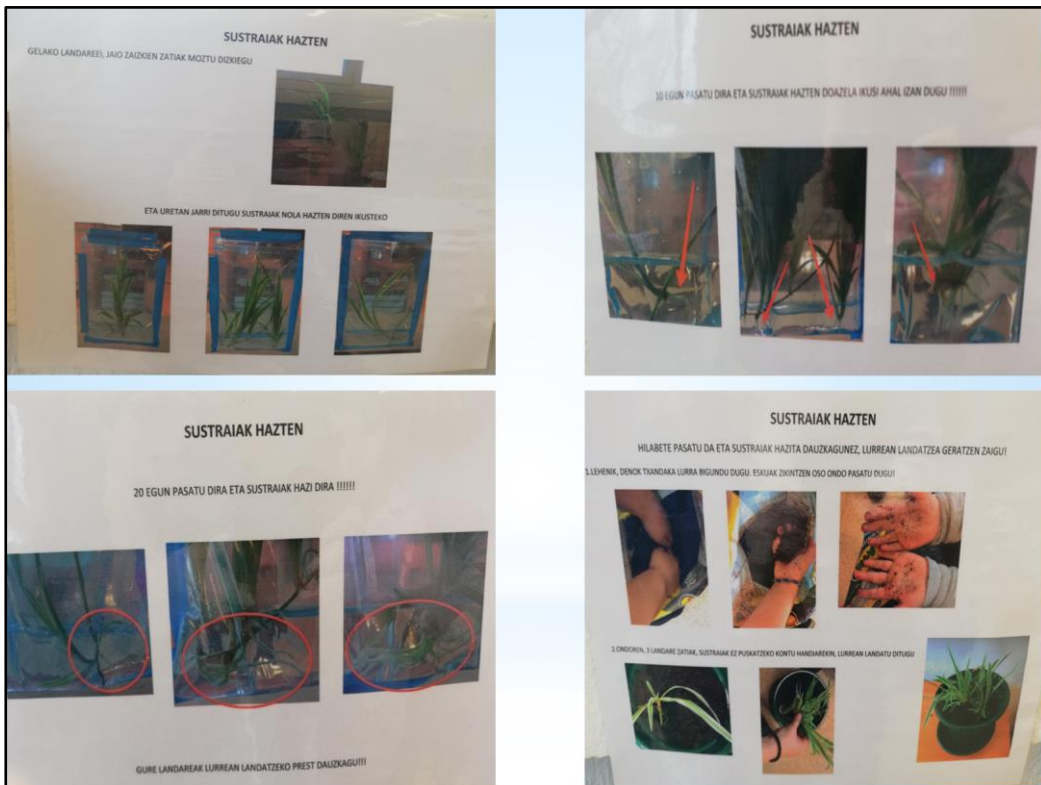
- Pupils introduced the seeds inside the pine cones and placed the pine cones into water.
- They monitored the experience and recorded the changes taking place.

**5 YEAR-OLDS:  
GROWING  
NEW PLANTS  
FROM  
CUTTINGS**



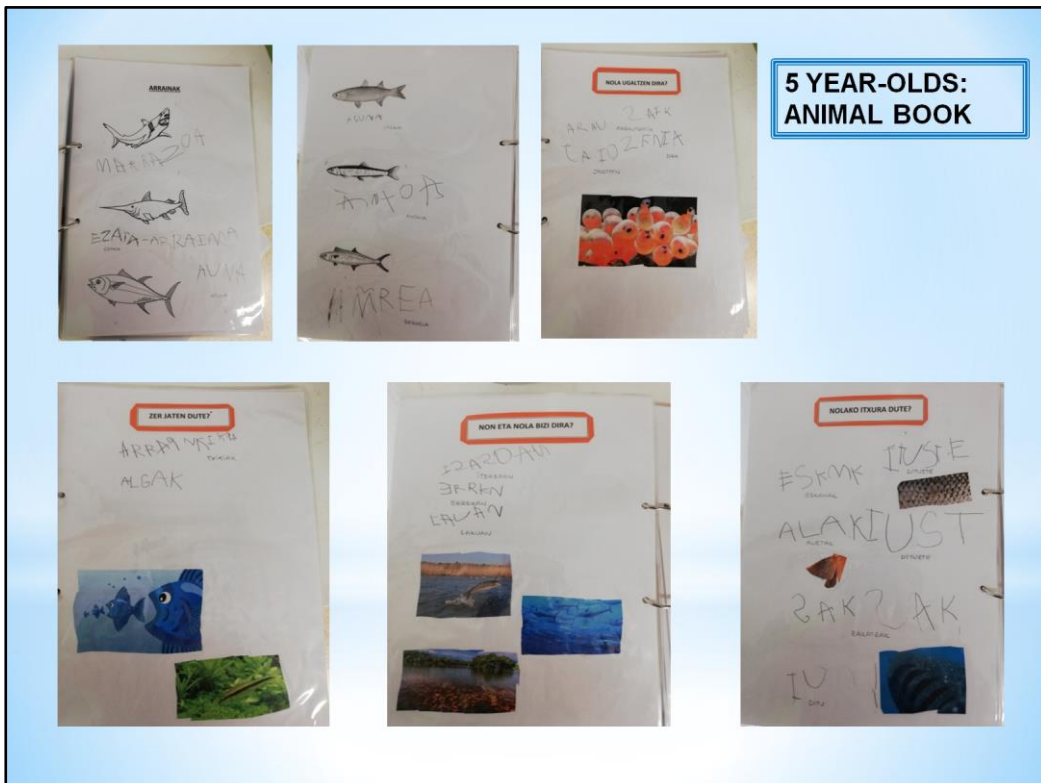
**5 YEAR-OLDS: GROWING NEW PLANTS FROM CUTTINGS**

- Pupils removed some pieces of the plants they already had in class.
- They placed them inside bags or bottles with water.



- They monitored the process and kept a record .

Once roots were established, students transplanted their cuttings.



## 5 YEAR-OLDS: ANIMAL BOOK

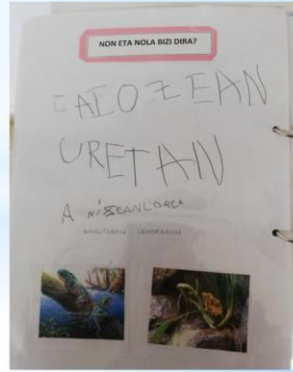
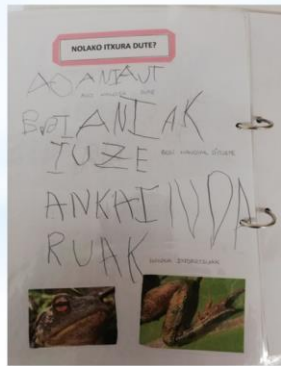
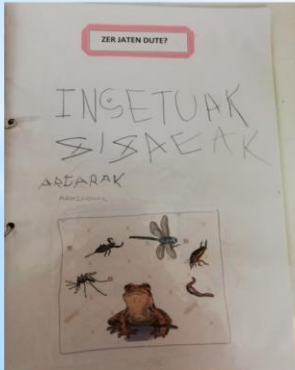
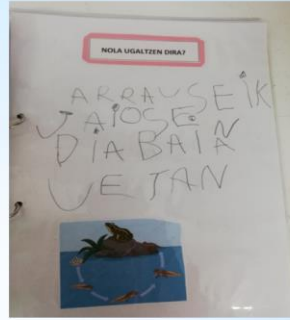
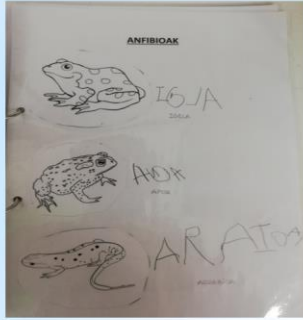
5 years old pupils made an animal book and one of the chapters was dedicated to animals that live in water.

First teacher asked pupils to think of any questions they could have about animals that live in water and these were the questions they came up with:

- What animals live in water?
- How do they reproduce?
- How do they look like?
- What do they eat?
- Where and how do they live?
- Did you know?

Then pupils started their own research with their teacher's help. Everyday teacher and students read different animal books and they wrote down the information they needed.

Now they've got the book in class and they can read it whenever they want!



## 1ST GRADE: MARINE FOSSILS



### 1 ST GRADE: MARINE FOSSILS

**We have found a large amount of marine fossils along our coastline , in the rocks of the Black Flysch around Mutriku.**

Our pupils have participated in the first Geoschool Project founded by the Basque Coast Unesco Global Geopark and carried out by the “Algorri Centre” (<https://www.algorri.eus/?lang=es%2F>), in Zumaia.

Inside this Project 1st graders visited the Nautilus Museum (The Geological Interpretation Centre of Mutriku). The Nautilus Museum exhibits an important collection of fossils found in the Black Flysch.

Pupils created fossils which can help pupils to understand what they are.







**1ST GRADE:  
STALACTITES AND  
STALAGMITES**

**1ST GRADE: STALACTITES AND STALAGMITES**

Pupils travelled to **Prehistory**, because they wanted to learn about the **Early humans**.

Our pupils did a field trip to visit one of those caves, called "**Ekainberri**" in Zestoa. "**Ekainberri**" is the replica of the "**Ekain Cave**".

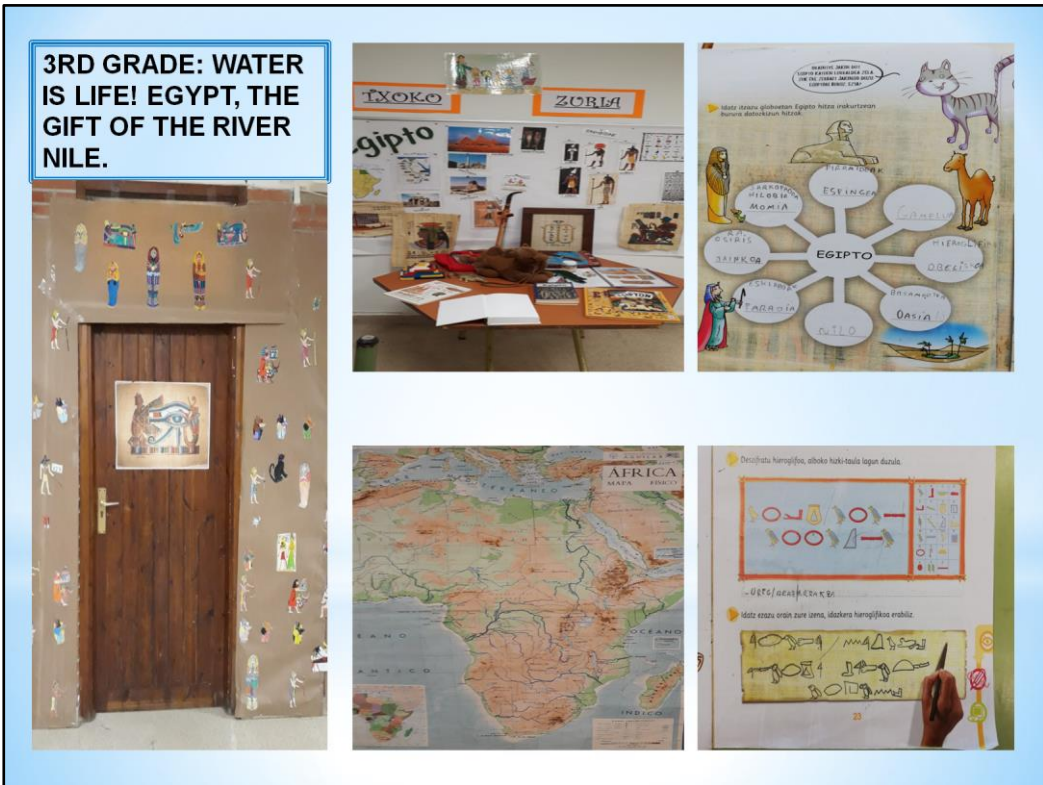
They recreated the **paintings** and the **stalactites**.



**Stalactites** form over time when **water** slowly drips from cracks in the ceiling. There are minerals (calcite) dissolved in the water that build up over time as the water drips, forming stalactites and stalagmites. This process is called **precipitation**.

**Materials:** Epsom salt (Magnesium sulfate), clear glass containers, a dish, 2 clips or 2 screws, water, a sauce pan, a stove (induction plaque), cotton string.

**3RD GRADE: WATER IS LIFE! EGYPT, THE GIFT OF THE RIVER NILE.**



**3<sup>RD</sup> GRADE: WATER IS LIFE! EGYPT, THE GIFT OF THE RIVER NILE.**

All living things **need water to survive**.

Access to water is still crucial to modern civilizations; water scarcity affects more than 2.8 billion people globally.

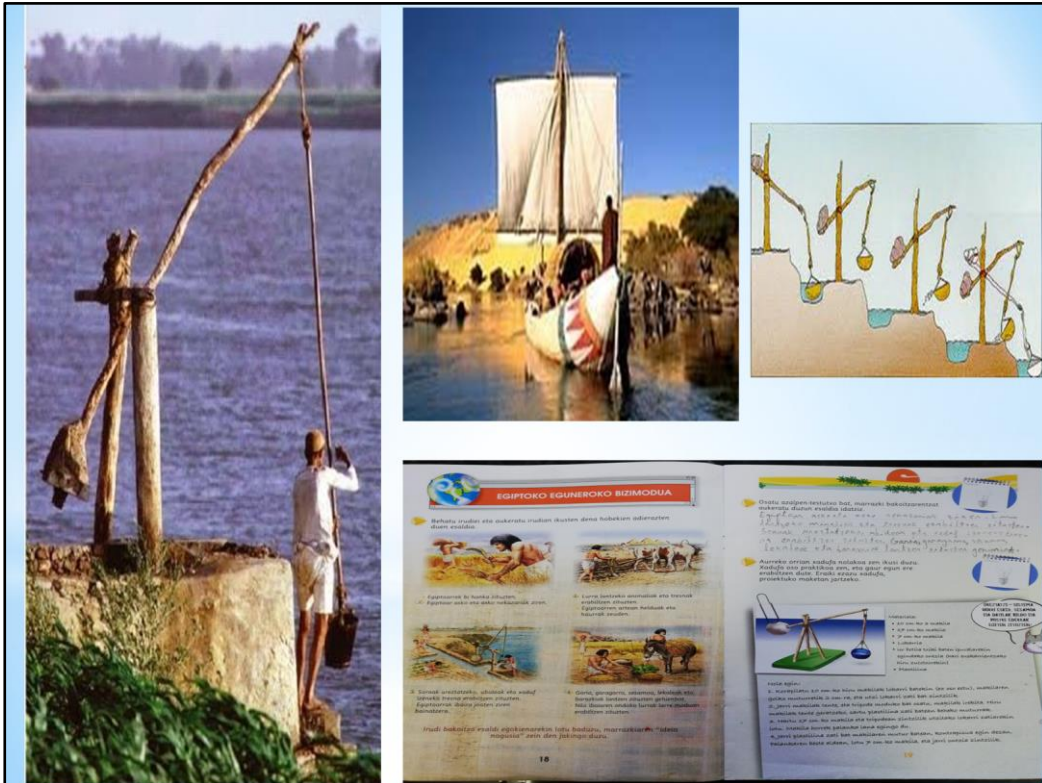
**Civilizations developed around rivers because their waters provided places to fish and hunt** the animals that came to drink water. They also provided a supply of **drinking water** and as the **rivers flooded**, the lands **around** them became fertile for **growing crops**.

Goods and people could be **transported** easily.

**The “White corner”**

When we start a new project, we always ask students to bring any materials related with the topic they have at home. These materials will be in class until we finish the project.

Most of times we realize that they already have a lot of information about the topic.



The Egyptians constructed **canals and irrigation ditches to harness Nile river's yearly flood and bring water to distant fields.**

The **Shadoof** is a long balancing pole with a weight on one end and a bucket on the other. The bucket is filled with water and easily raised then emptied onto higher ground. **It is still used nowadays.**

**At the end of the project pupils used their new knowledge to create a diorama about the Nile.**



**At the end of the project pupils used their new knowledge to create a diorama about the Nile.**





**WATER SCARCITY**

**WATER SCARCITY**

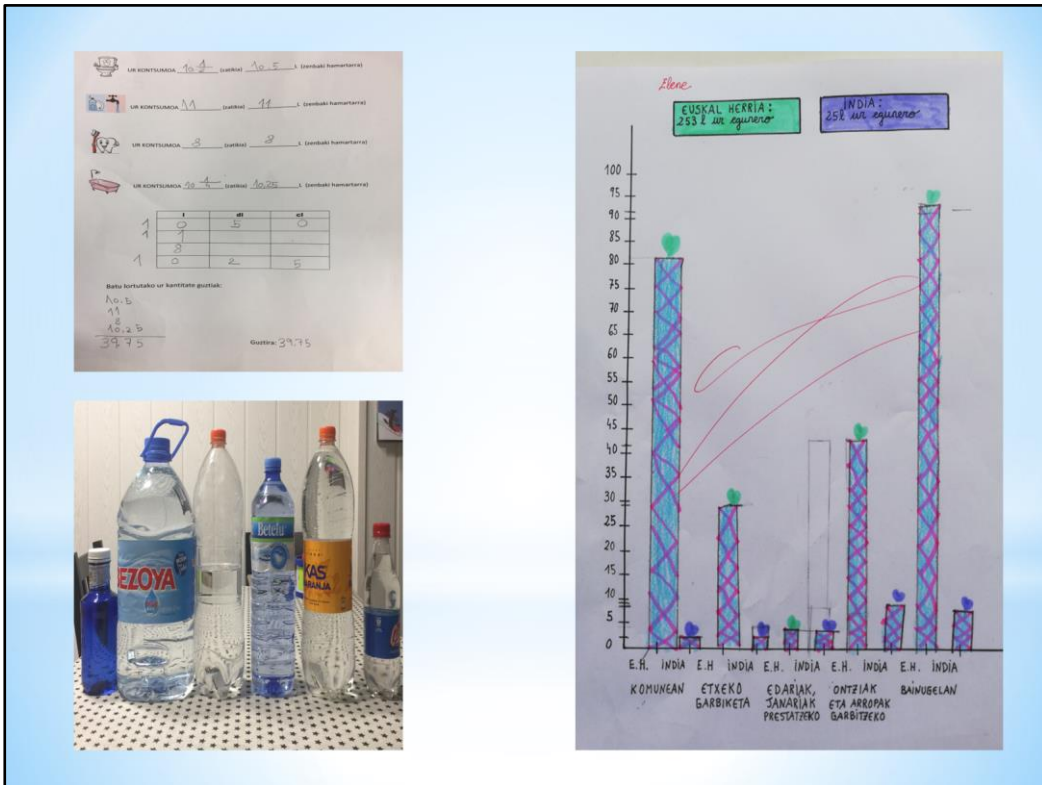
Pupils started commenting on the pictures.

- What are they doing?
- Do you think the water in the picture is safe to drink?
- Would you drink that water? Why?
- What could happen if you drink dirty water?
- What do you think they will use water for?
- Do you think they will have enough water to wash their clothes, to have a shower, to cook, to drink, to water the crops.....?

**FACTS:** Worldwide 844 million people live without access to safe Water. Dirty water and lack of access to sanitation kills over 5000 children every day.

Water saving solutions are necessary to keep kids in school, and women from having to spend all of their time walking to get water just for **hand washing**. One of the simplest solutions is the **tippy tap**. The **tippy tap is a hand washing station** that allows people to use small amounts of flowing water (40 ml instead of 500ml+) and soap instead of contaminating a whole bowl of water.

**Hand washing can cut down on diarrhea** rates by more than 40%.



**Water conservation. How can we prevent water scarcity / water shortages?**

- **What is water conservation?** It means using less water or recycling used water so that it can be used again.
- Why do you think water conservation will be important?

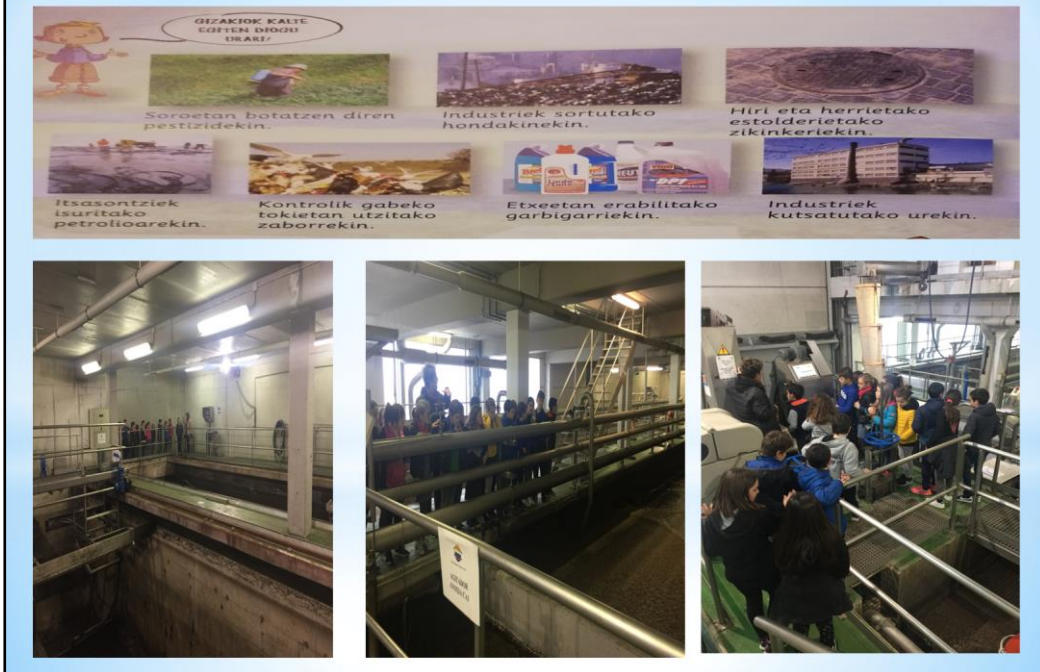
**Pupils measured** how much water they use at home: flushing the toilet, cleaning the house, to drink, cooking, washing the dishes, washing the clothes, in the bathroom (having a shower, hand washing, brushing teeth) **and compared it with the water an average Indian family uses.**

**The average Indian family uses 25 l a day. If you had access to only 25 l a day,**

- **what would you use it for? And what would you do to use less water in your everyday life?** (we can have a shower instead of a bath, close the tap while you are cleaning your teeth, check for water leaks, run the dishwasher and the washing machine only when they are full....)



## HOW IS WATER CONTAMINATED?: VISIT TO 'ZABALERA', WASTEWATER-TREATMENT PLANT



### HOW IS WATER CONTAMINATED:

- Where does all the dirty water, from our houses and factories go? What do we do with it?
- Water leaving our homes generally is sent to a **wastewater-treatment plant** through a sewer system.

### VISIT TO "ZABALERA", WASTEWATER-TREATMENT PLANT

HOW DOES WATER GET TO OUR TAPS?:  
VISIT TO 'KILIMON',  
DRINKING WATER  
TREATMENT PLANT



**HOW DOES WATER GET TO OUR TAPS?**

VISIT TO "KILIMON": DRINKING WATER TREATMENT PLANT.



**CREATE A WATER FILTER:**

Students made their own **hypothesis**:

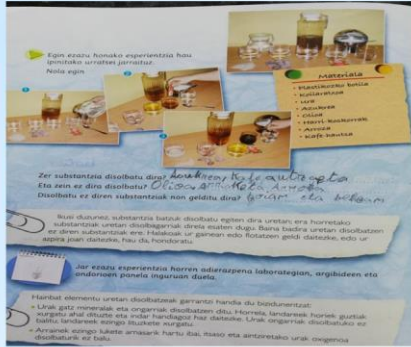
- Filtered water will be cleaner or dirtier? Water will be cleaner because cotton will remove dirt.
- What are the layers of different materials for? To clean the water.

Students drew **conclusions**:

- The filtered water is cleaner now because the different layers removed the dirt.



**WHAT CAN DISSOLVE IN WATER?**



**WHAT CAN DISSOLVE IN WATER?:**

**Water** is capable of **dissolving** a variety of different substances. **water** is called the "**universal solvent**" because it **dissolves** more substances than any other liquid.

A **solution** is made when one **substance** called the **solute** "**dissolves**" into another **substance** called the **solvent**.

- Students made their **hypothesis**:

**Questions:**

Will it dissolve? We think ..... will dissolve in water.

..... will not dissolve.

Will water smell different?

Will water colour change?

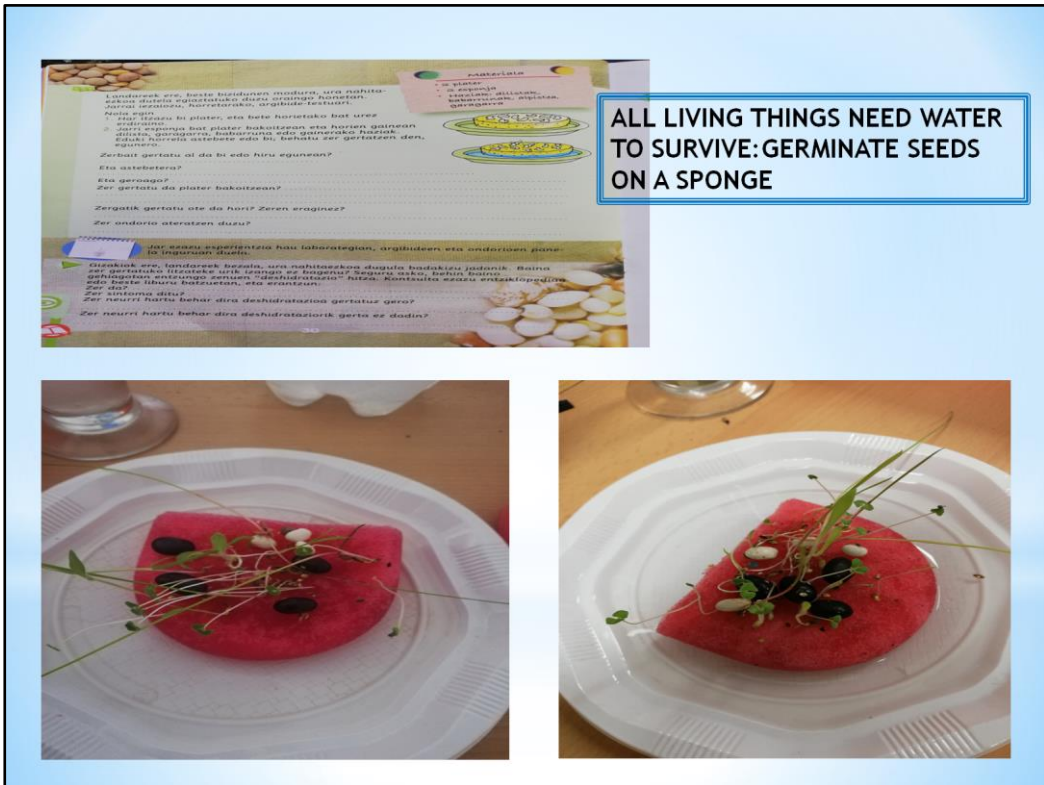
Will water flavour change?





**MAKE YOUR RAIN STICK**

Water can be used to make sculptures, paint pictures and even make music. The “rain stick” is a musical instrument that makes a sound like the rain. Pupils made their own “rain stick”.





## HOW DO PLANTS DRINK WATER?



### HOW DO PLANTS DRINK WATER?:

We did this experiment to show pupils how plants absorb water and nutrients up through their stems.

We started doing the experience with paper towels and then we did it with cabbage leaves and margarita flowers.

- What do you think it will happen?

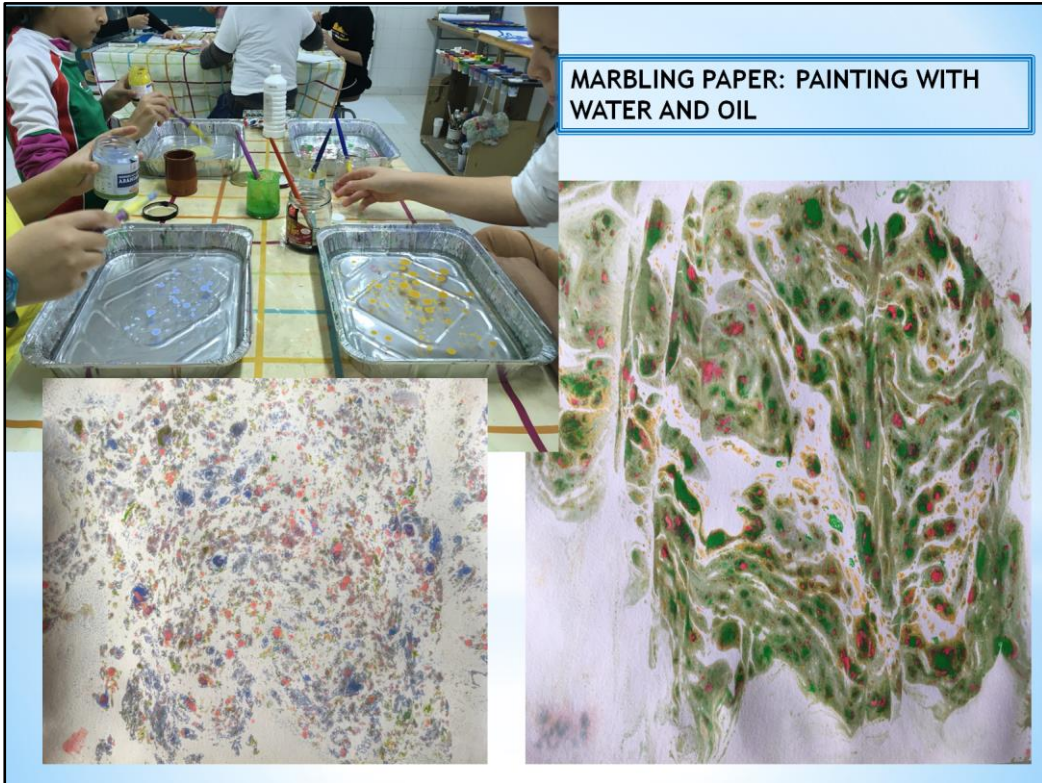
Observe what happens.

- Why do you think the colours are changing?
- Why might the water be able to move up against gravity like that?

**Facts:** The water moves up the paper towels through a process called **capillary action**. The paper towel is made from fibers and the water is able to travel through the gaps in the fibers. The gaps in the paper towel act like **capillary tubes** and pull the water upward. This is what helps water climb from a plant's roots to the leaves at the top of the plant or tree.

The water is able to move upward against gravity because of the attractive forces between the water and the fibers in the paper towel.

**Facts:** Plants have tiny tubes, called **xylem tubes**, throughout their body that help carry water up through the stem (plants have "veins" like we have), and to the leaves. The water molecules are attracted to the molecules in the tubes, helping to pull the water upward. This is called capillary action. We can see these pathways with our experiment!



**MARBLING PAPER: PAINTING WITH WATER AND OIL**

### **MARBLING PAPER: PAINTING WITH WATER AND OIL**

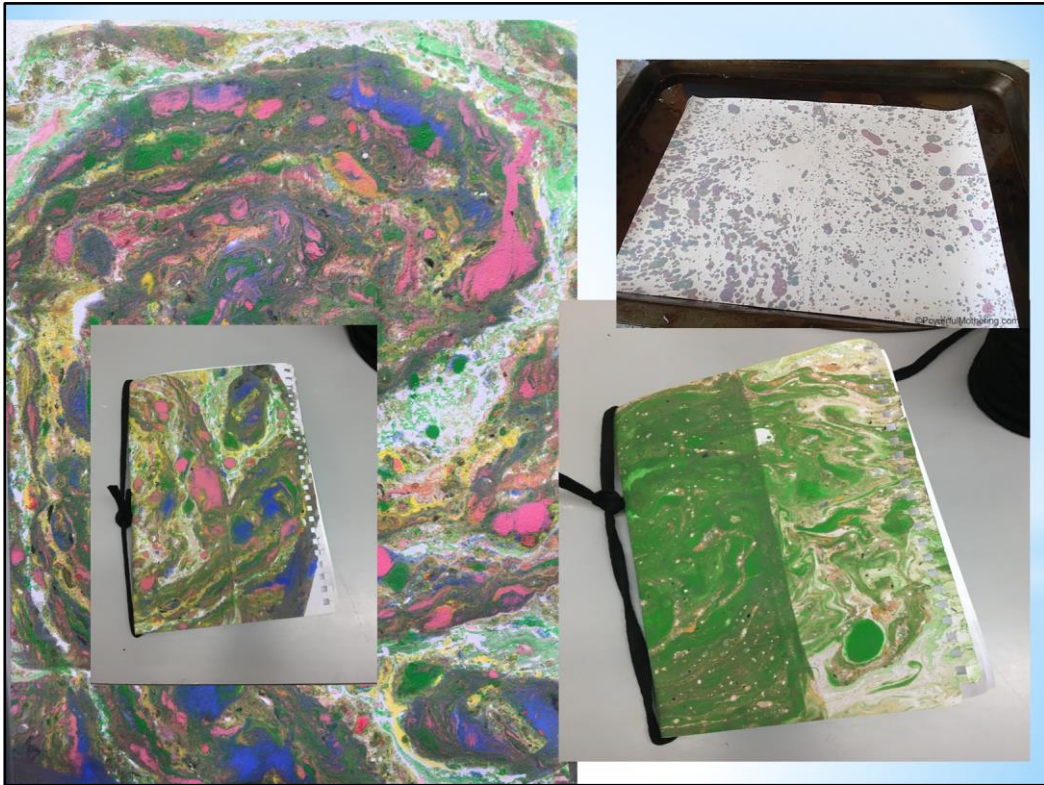
We use science to marble paper:

#### **MATERIALS**

- Baking dish
- cooking oil
- liquid watercolor (or food coloring)
- heavy paper (sketch paper, watercolor paper)
- eye droppers or pipettes

#### **PROCESS**

- Mix up some food coloring with cooking oil in a few cups.
- Use a tray and add a thin layer of water to cover the bottom.
- Next use your eye dropper to drop the colorful oil in various patterns on top of the water.
- Place the paper on top of the creation.
- The oils will be absorbed into the paper along with the colors.
- Remove the paper and let it settle on a surface to dry out.



**Pupils made notebooks using the marbled paper.**

### **SCIENCE BEHIND**

- Oil is less dense than water. That means that the molecules that make up water are packed more tightly than those in the same amount of oil, so water will always sink below the oil.
- Oil and water don't mix because water likes itself more than oil. Oil is non-polar, which means it's "afraid of water" so it doesn't like to mix and water molecules are more attracted to other water molecules than oil molecules because they are polar. So, oil only likes non-polar molecules and water only like polar molecules.

**MARITIME HERITAGE: A VISIT TO ALBAOLA. THE SEA FACTORY OF THE BASQUES. (5TH GRADE)**



**MARITIME HERITAGE: A VISIT TO ALBAOLA. THE SEA FACTORY OF THE BASQUES.**

The Basque people have always had a close relationship with the sea. The Basques were pioneers in **whaling and cod fishing in Newfoundland (Canada)** and the Gulf of St. Lawrence since the early part of the sixteenth century.

The Basques left many traces of their presence in Canada. **Five Basque shipwrecks have been located in the area; the earliest, the *San Juan*, dates from 1565** and it shows how good shipbuilders they were.

Our pupils visited **Albaola: The Sea Factory of the Basques**. Albaola is located in Pasaia. We got to Pasaia by bus and then we took a boat to the factory.

Our monitors gave us some information about the relationship our ancestors had with the whale and our students showed that they already know quite a lot about that because they worked on this theme in the 2nd grade.



Our pupils made a **compass**, worked with **maps**, locating the **points of the compass** and drawing some routes using the given **latitude and longitude coordinates** and saw the **replica of the San Juan Whaleship** that is being built using the same materials, procedures and tools that our ancestros did.



There is an International Boat Building School in Albaola. The school takes place in an atmosphere centred on the recovery of our maritime heritage.

**WATER CAN SHAPE THE EARTH: ZUMAIA CLIFFS AND TIDAL PLAIN**



**WATER CAN SHAPE THE EARTH: ZUMAIA CLIFFS AND TIDAL PLAIN**

Our 6th grade pupils went on a field trip to Zumaia, where some amazing cliffs are located and covers around 8 kilometres.

Over thousands of years, the **sea waves have eroded** the smooth clayey materials of the flysch. The force of the sea/waves causes pieces of rock to break off changing the coastline over time.

The monitors of the Algorri Interpretation Centre helped our students to better know our coastline and understand this process.



On their route through the cliffs our students saw the Hermitage of San Telmo, located on the Itzurun beach, over a cliff shaped by the flysch. Water and wind erode that piece of land 1 cm per year so this Hermitage will fall into the sea in some years!





## AZTERKOSTA (COASTWATCH)

### AZTERKOSTA (COASTWATCH)

"Azterkosta" is the name for the Basque Country of the European program "Coastwatch Europe" (<http://coastwatch.org/europe/about/>).

Coastwatch Europe (CWE) is an international network of environmental groups, universities and other educational institutions, who in turn work with local groups and individuals around the coast of Europe. CWE primarily protects wetlands by raising public awareness of their value and demonstrating practical ways to save them.

The goal of CWE is the protection and sustainable use of coastal resources.

Our pupils **brought water samples** from the beach **and they proceeded to analyse** them.

Results showed that water has too many phosphates causing excessive growth of algae.

Excessive growth of algae harms water quality, food resources and habitats, and decreases the oxygen that fish and other aquatic life need to survive.



Our students made the most of their time **collecting garbage** on the beach and by the seashore trying to keep our coast a bit cleaner. **Petteri** helped them too! Eighty percent of pollution to the marine environment comes from the land.



### **MARINE POLLUTION DIORAMA**

Pupils made a diorama using some of the rubbish collected on the beach and IN the rocks:

- Paper needs 3 months to 1 year to dissolve.
- Glass bottles need 1.000.000 years to decompose.
- Plastic bags need over 100 years to degrade.
- Cans need over 200 years to decompose.
- Batteries take between 500 and 1.000 years to decompose.
- Plastic bottles can take 450 years to degrade.
- Cigarette butts take from 18 months to 10 years to decompose.



## 2ND GRADE: HOMEMADE PLASTICINE.

2nd grade pupils taught 5th grade pupils how to make plasticine. Younger students realized that they can teach something new to older students and older students realized that they can learn from the younger ones.

### **Materials:**

Water, flour, salt, oil, food colouring

### **Process:**

it's very easy and you can follow directions here:

[https://www.youtube.com/watch?v=89dG2Ag\\_oVg](https://www.youtube.com/watch?v=89dG2Ag_oVg)

<https://www.youtube.com/watch?v=IZVQwabqup0>



## MAGIC WITH WATER: OIL AND WATER

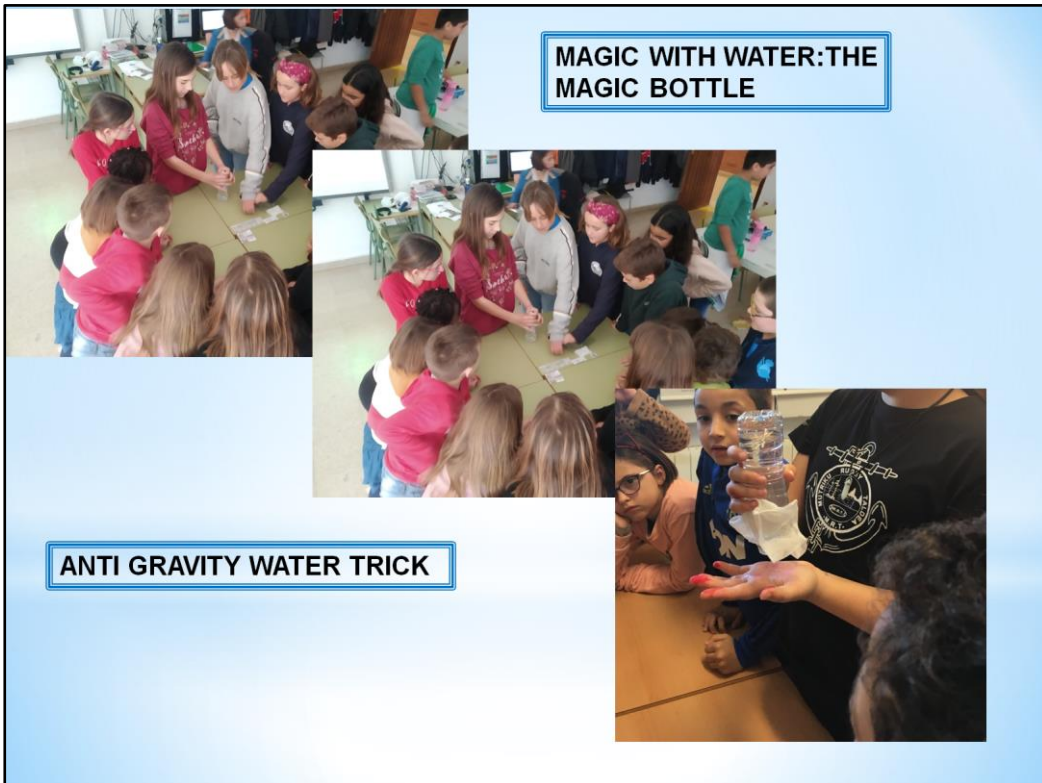


Oil and water do **not** mix. The molecules of water can't mix with the molecules of oil.

Lift the oil container, turn it upside-down, and line it up directly over the water-filled container. Set the oil in place over the container holding the water. Keep the card between the containers to let the liquids settle. Slowly and gently remove the playing card. What happens? The oil and water remain in their respective upper and lower containers.



Now, repeat the process. But, this time, turn the water container upside down and place it on top of the oil-filled container. Carefully remove the card and watch what happens. The water and oil switch places. If you wait long enough, it will look almost exactly opposite of how it started, too.



**Procedure:**

Fill the bottle up with water.

Carefully cut out a piece of flyscreen.

Put the flyscreen over the bottle's mouth and bend the flyscreen down the neck of the bottle.

Put a rubber band around the bottle's neck to hold the flyscreen in place.

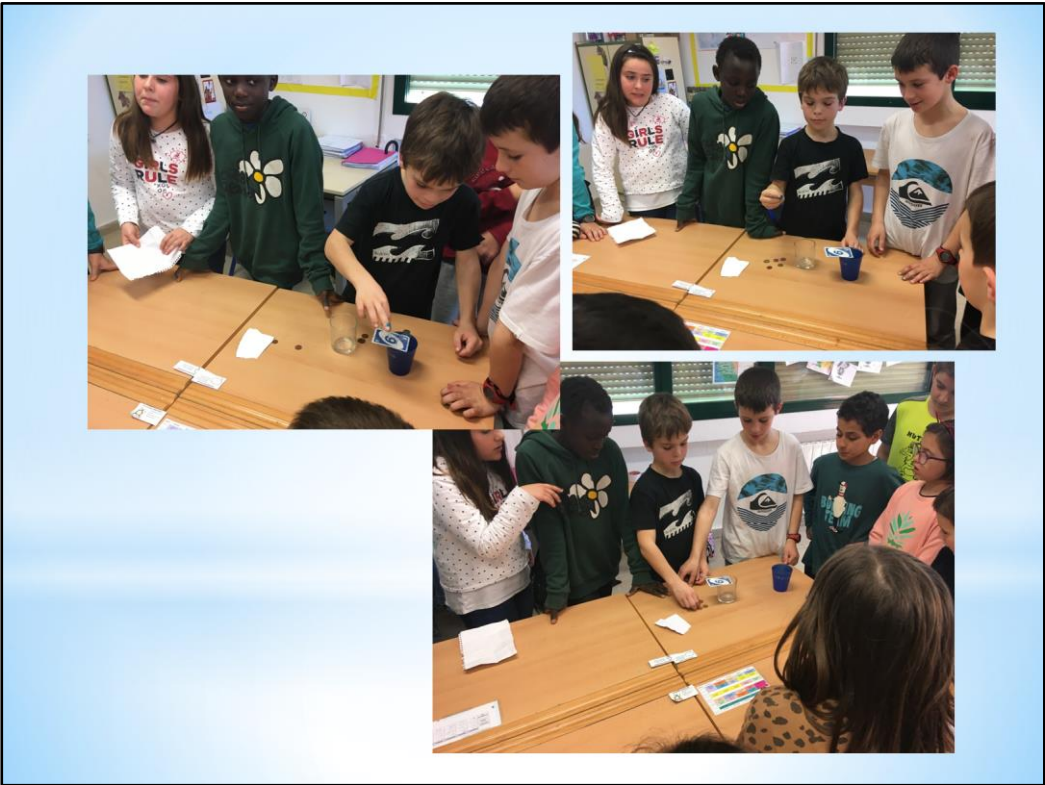
Turn the bottle upside down: When the bottle is completely upside down, the water stops pouring.



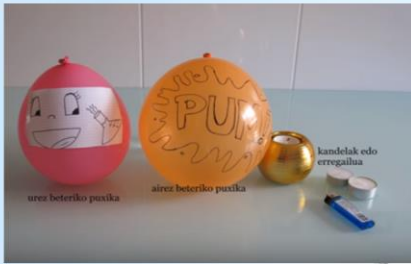


Insert some toothpicks into the neck of the bottle which are clearly seen to float up through the water inside.

**SCIENCE:** Water tends to stick to itself, and this property is known as surface tension. The air can't stretch the surface of the water from a tiny flyscreen square to a huge bubble. The water molecules don't stick together particularly strongly, but it's enough to keep air out and water in.



## MAGIC WITH WATER: FIRE RESISTANT WATER BALLOON

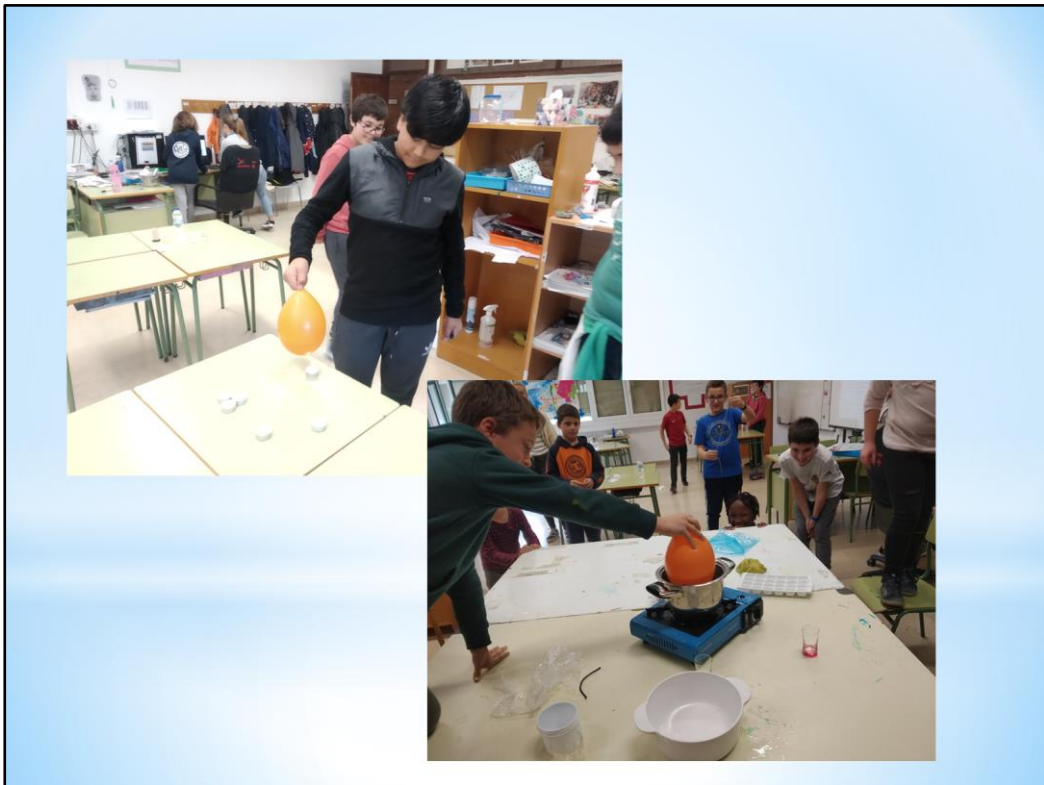


### Instructions:

Inflate one balloon with air and tie off.

Stretch the other balloon over a tap and fill with water until the balloon is approximately the size of a grapefruit.

Light the candle and ask the class what they expect to happen when the flame touches the 'air only' balloon. When they have had sufficient time to consider the possible outcomes, hold the balloon in the flame – it will pop, as expected.



**Let's repeat the experiment, but this time the bottom of the balloon will have a layer of water inside.**

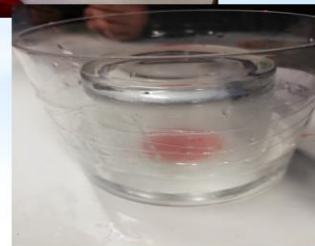
Show the water balloon to the class and ask whether or not they would like you to repeat the demonstration with it.

Ask them what they expect to happen this time.

Lower the balloon from above to ensure the flame does not touch the sides of the balloon – it will burst if this happens! Surprisingly, the balloon will not burst.

Amazing **property of water** – its ability to absorb heat.

## MAGIC WITH WATER: RISING WATER.



### PROCEDURE:

Pour the colored water in the plate.

Place the candle in the middle of the plate, light the candle and cover it with the glass.

Observe what happens.

The candle flame will gradually diminish in size as it consumes the oxygen inside the bottle

The candle goes out because it runs out of oxygen

Heat produced by the candle's flame causes the air inside the bottle to expand – thermal expansion- some of this expanding air is forced out of the bottle which can be observed as it bubbles through the water .

When the candle flame expires, the remaining air in the bottle begins to cool – a cooling gas contracts creating a partial vacuum (a region of lower than atmospheric pressure) – the higher external pressure forces water into the bottle until the external and internal pressures are equalised (the pressure inside the bottle is lower than the pressure outside the bottle)