Mare Nostrum

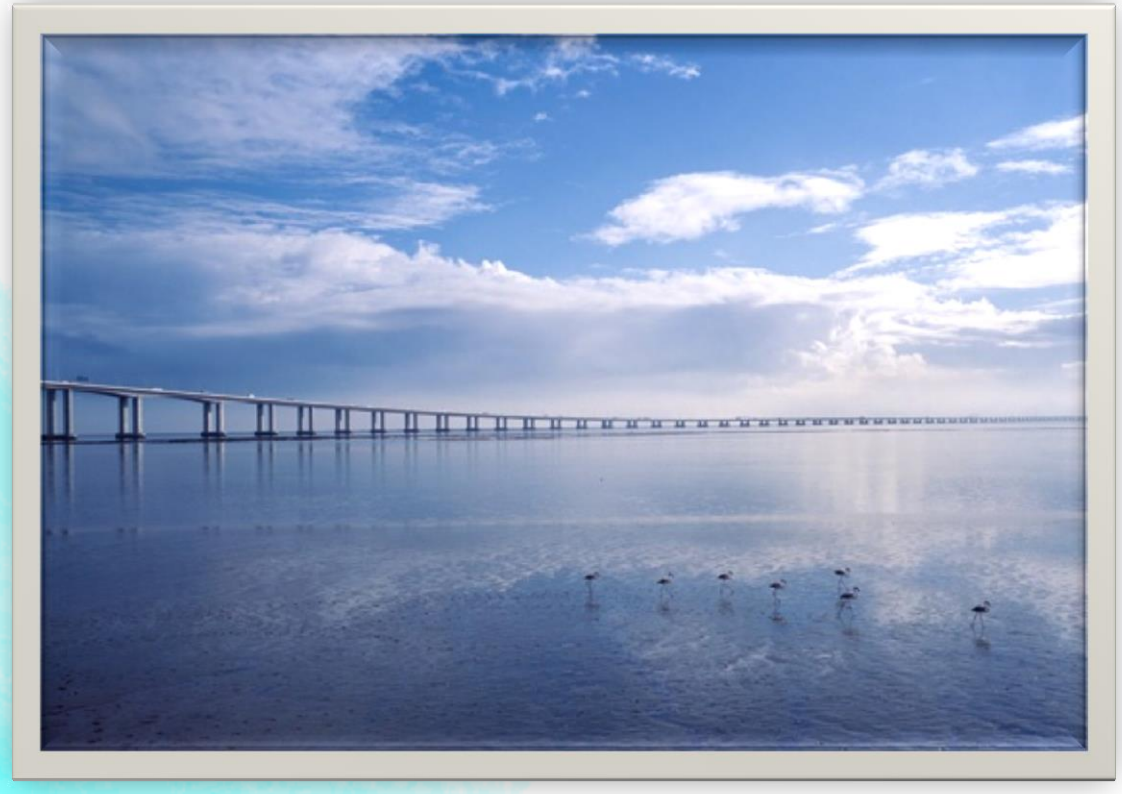
COMENIUS MULTILATERAL PROJECT

CONSTANTA, ROMANIA

20-24 JANUARY 2014

EB 2,3 Piscinas - Lisboa
Lisbon, Portugal

Rio Tejo - Tagus River



Expo 98 - today's look

Rio Tejo - Tagus River - Its bridges

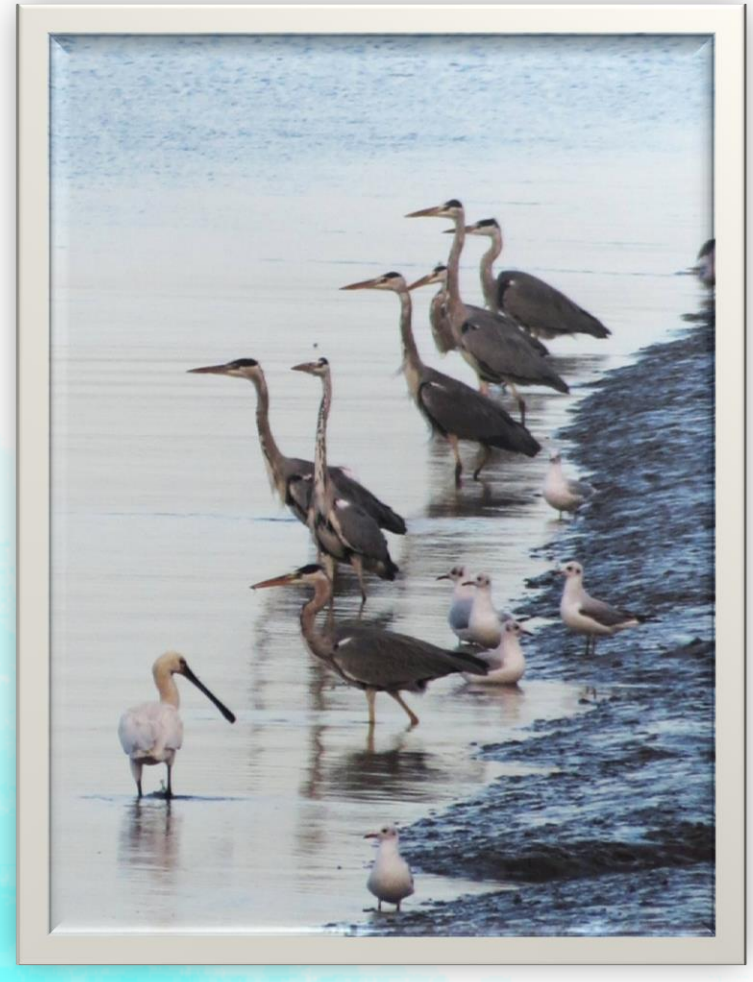
Vasco da Gama bridge

25th April bridge

Rio Tejo - Tagus River

- The Tagus River flows in our city, Lisbon, and is born in Albarracín, Spain.
- It’s the biggest river in the Iberian peninsula which includes Portugal and Spain.
- Its estuary, located in our city, is the biggest in all western Europe.

Rio Tejo - Tagus River



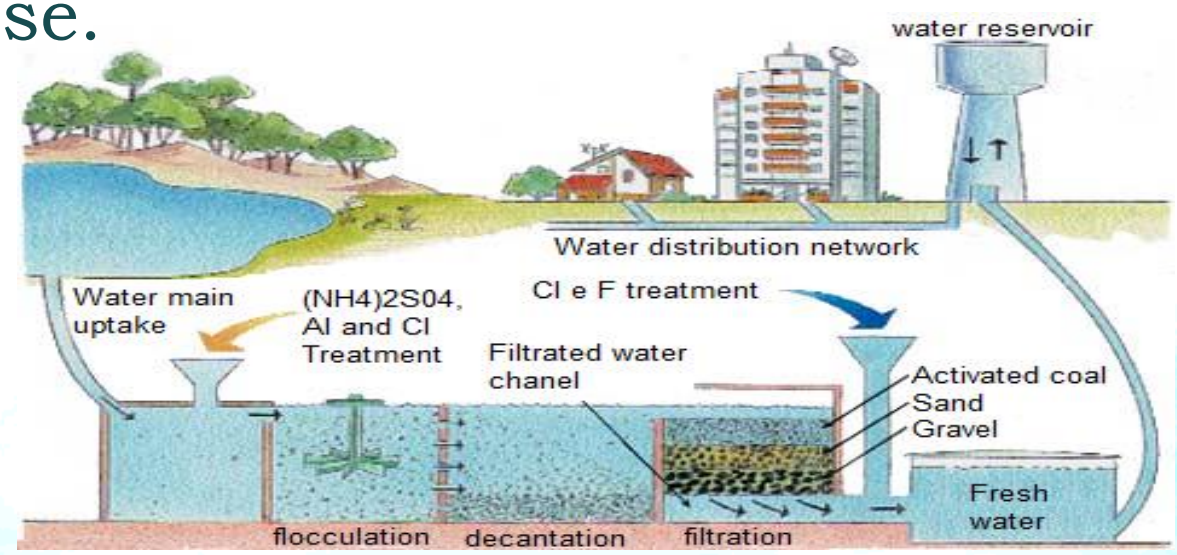
The quality of the water is responsible for the presence of migrant birds, and some of them stay all year long, like Flamingoes, Herons, Eurasian Spoonbills and some shorebirds.

Rio Tejo - Tagus River

Most of the water that we have in Lisbon is collected in a dam, located in Castelo do Bode. The water is collected in Valada do Tejo and comes from river Zêzere, an affluent of river Tagus. Other collection point is Alviela river (on the right).

Rio Tejo - Tagus River

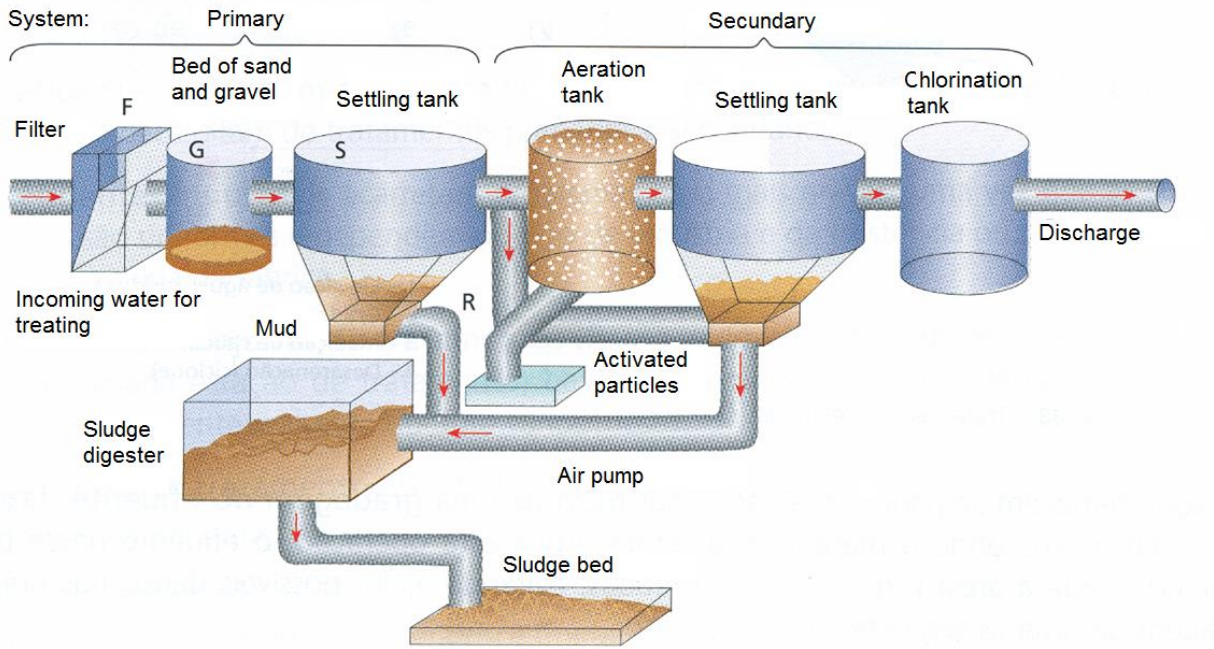
- Our city's tap water is supplied by a company, EPAL, and is treated in a place called ETA (water treatment station). EPAL chooses the best place to collect the water, depending on factors like how many people need to be supplied… ETA is responsible for the treatment of the water we are going to use, making it good for use.



Rio Tejo - Tagus River

- Residual water is treated in another place, ETAR (residual water treatment station). However, this time the water needs to match the environmental conditions, so it requires a different, more specific and long lasting treatment. Then the water is released into Tagus River.

- In 1990 the Portuguese government created 3 ETARs in Lisbon: Frielas, Alcântara and Beirolas.



Our City's ETARs - Tejo

Beirolas

Frielas

Alcântara

Back

Back

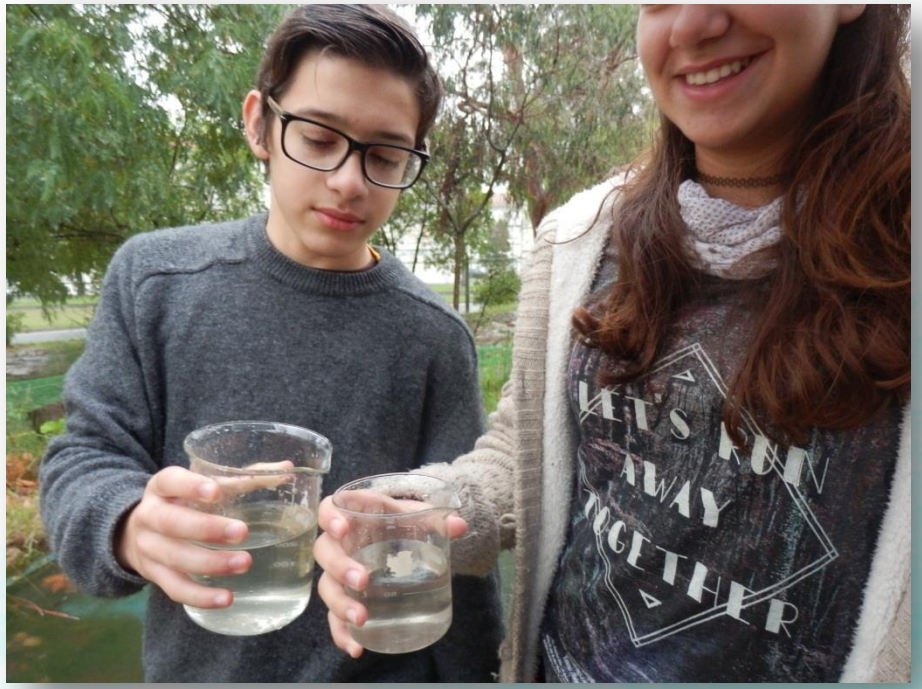
Rio Tejo - Tagus River

Parameters	Values	Perfect Values
Temperature	10,9° C	≤ 20
pH	7,10	6,5 – 8,5
Aluminium	0,11 mL/L	-
Chloride	15 mL/L	-
Water Hardness	79,74 mL/L	-
Nitrate	1 mL/L	≤ 5
Nitrite	< 0,02 mL/L	-
Iron	< 0,04 mL/L	≤ 0,5
Sulphate	56 mL/L	-
Manganese	< 0,1 mL/L	≤ 0,1


Water Analysis

Our Experiment

- In order to identify our pond's water microscopic species, we collected some water from our school's pond to identify them.



Our Experiment

- Date: 07/01/14
- Place: our school's pond
- Weather: rain
- Aquatic flora
- Time: 8h30 A.M.
- Soil: mud
- Max. deep: 50-100 cm
- Classification: small pond of fresh water

Our Experiment - material

To analyze the water, we used:

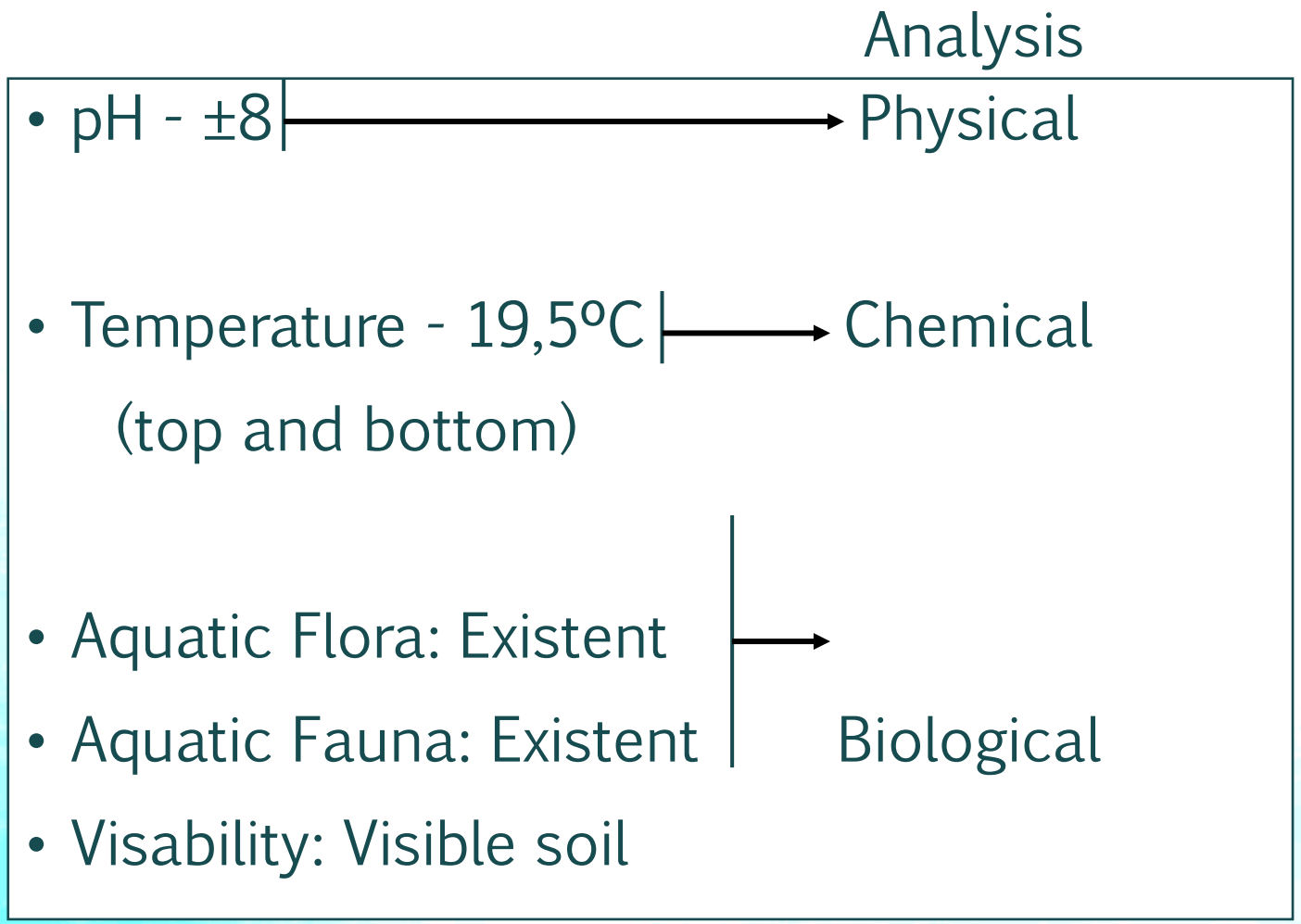
- Optical Microscope
- Beakers
- Test tubes
- Thermometers
- Tray
- Slides
- Pasteur's pipettes
- Pencil/pen
- Notebook
- Lamellas
- Erlenmeyer
- Universal indicator
- Filter Paper

Our Experiment - Method

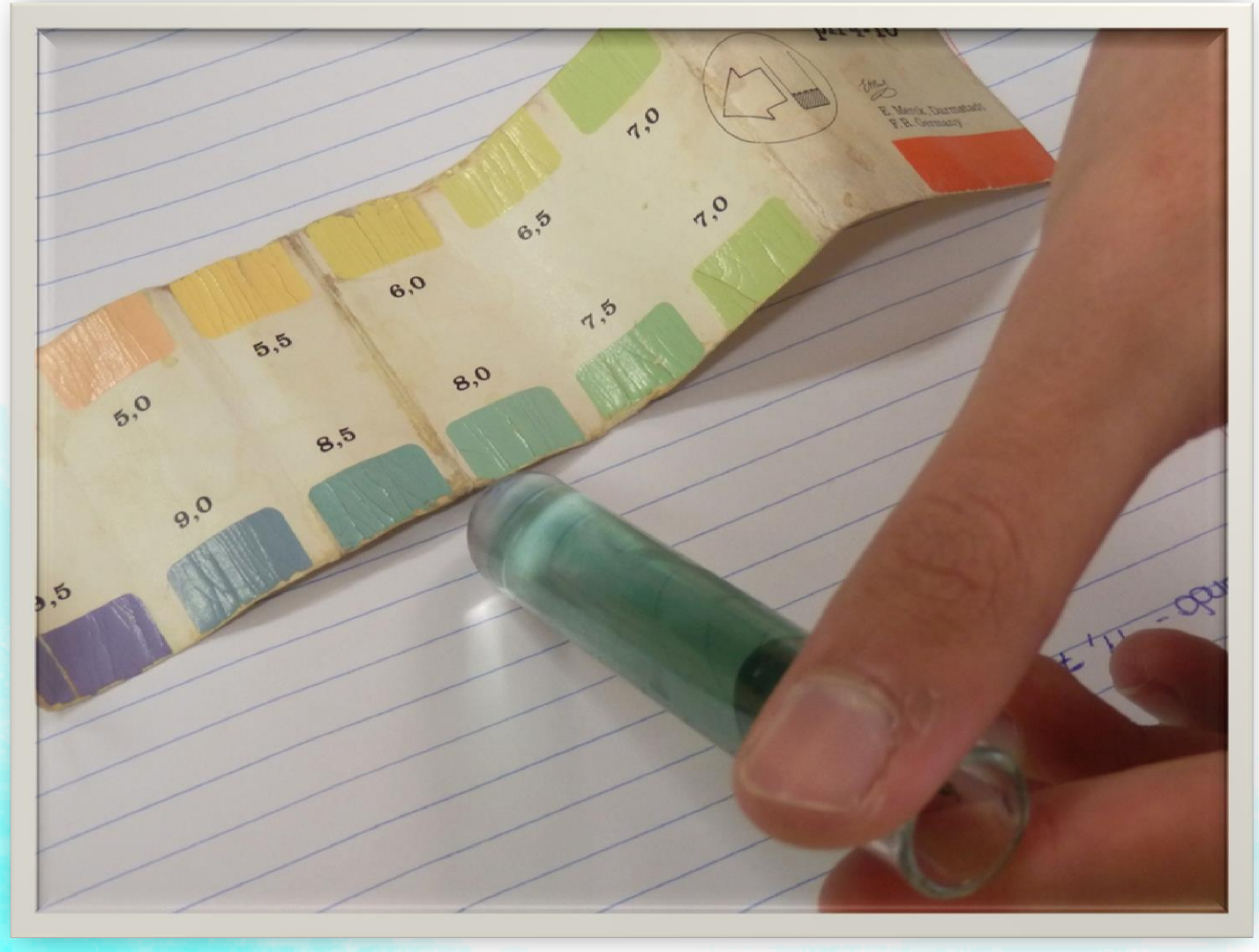
In order to analyse the water:

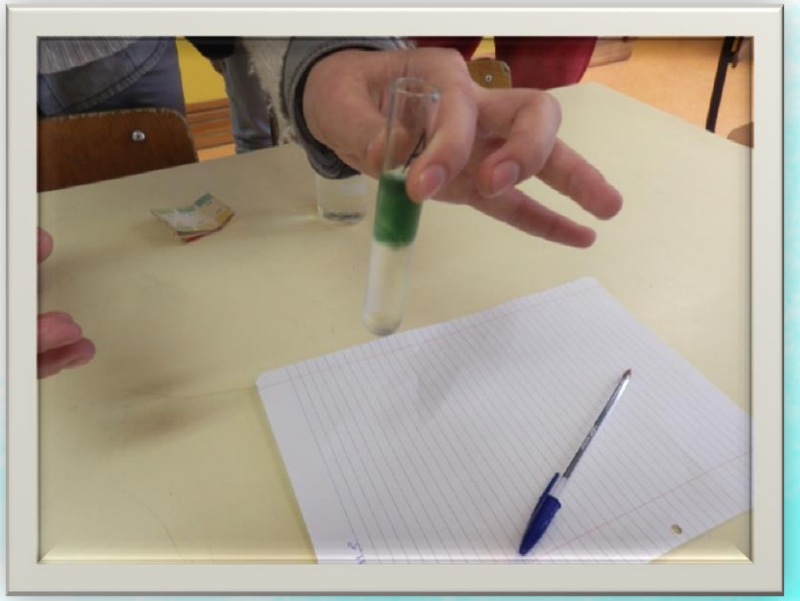
- We went to the pond and we collected some water.
- We brought it to the lab and we prepared it to be analysed on the microscope.
- We measured the top and the bottom temperature of the pond and we wrote the results.
- We collected some water and then we put it in a test tube.
- We dropped some universal indicator in the test tube.
- We compared the water's colour to the pH paper, to determine its value.
- We made microscopic observation.
- We wrote down the results.
- We took pictures of all the observations.

Our Experiment - Data

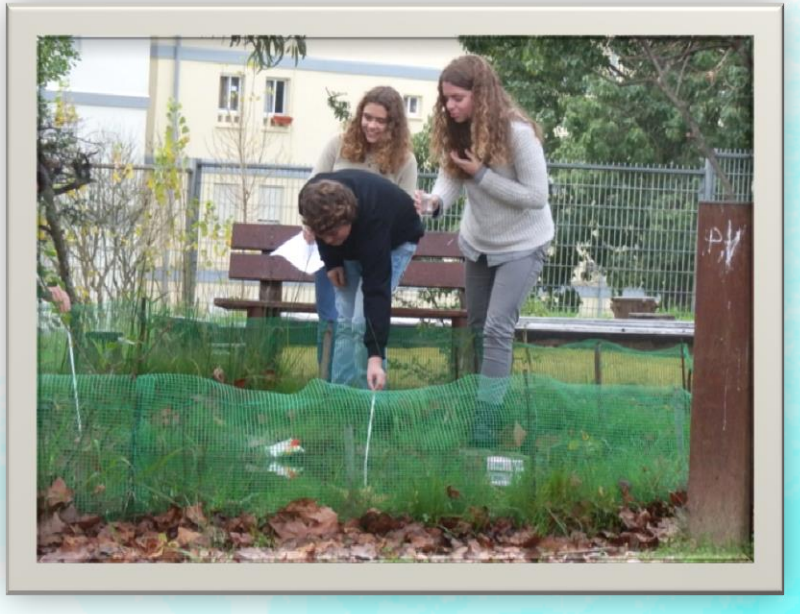


Our Experiment – Water pH





Our Experiment - Temperature



Our Findings …

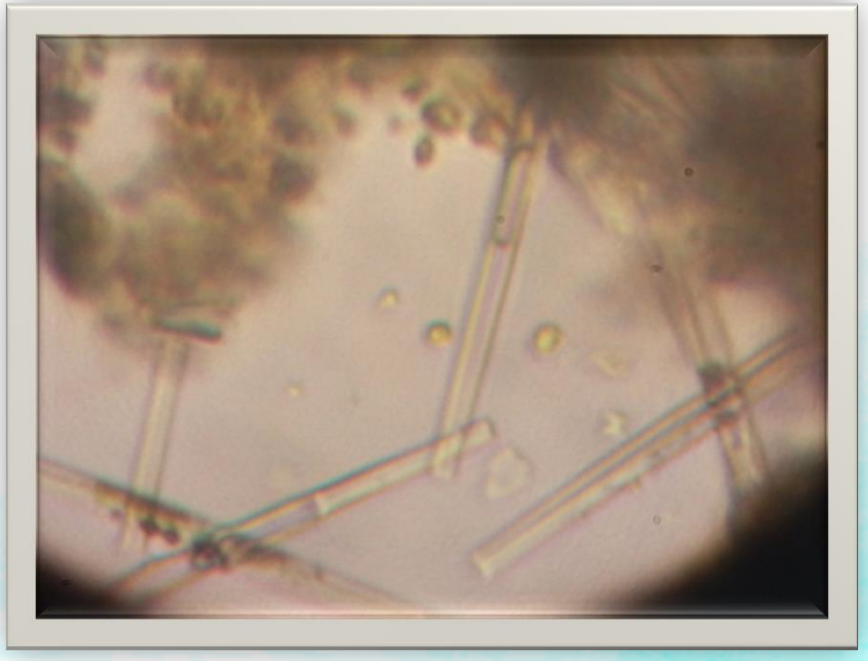
Diatomaceous

Microscopic Observation

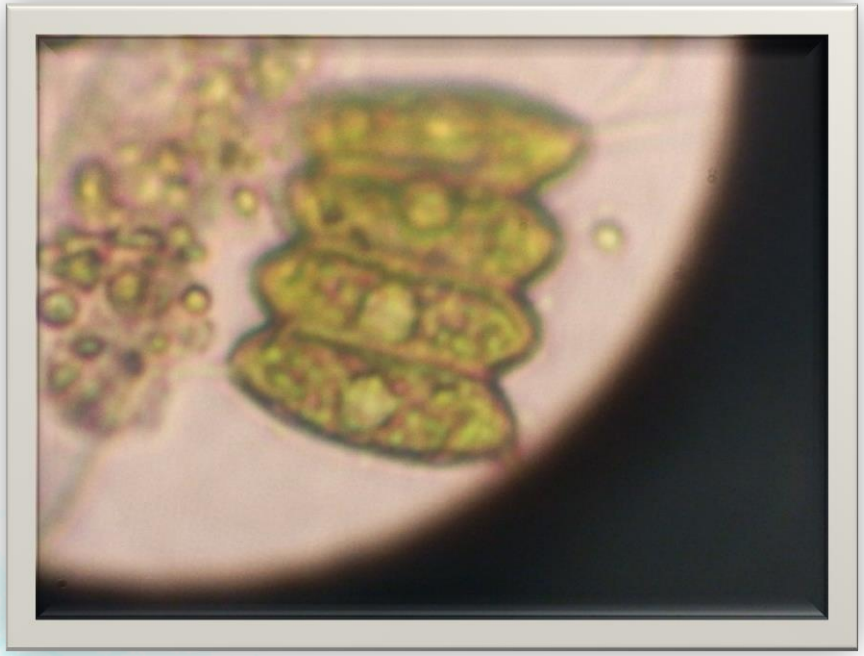
Microscopic ampliation

← Amp: oc(10X) x ob(10X)=100X

Amp: oc(10X) x ob(40X)=400X →



Our Findings… our pictures



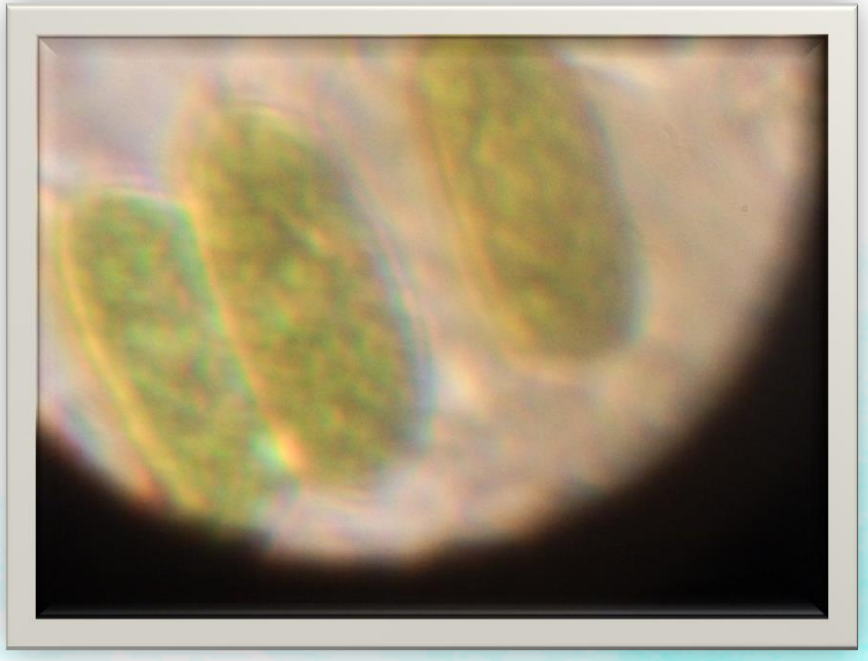
Scenedesmus

Diatomaceous

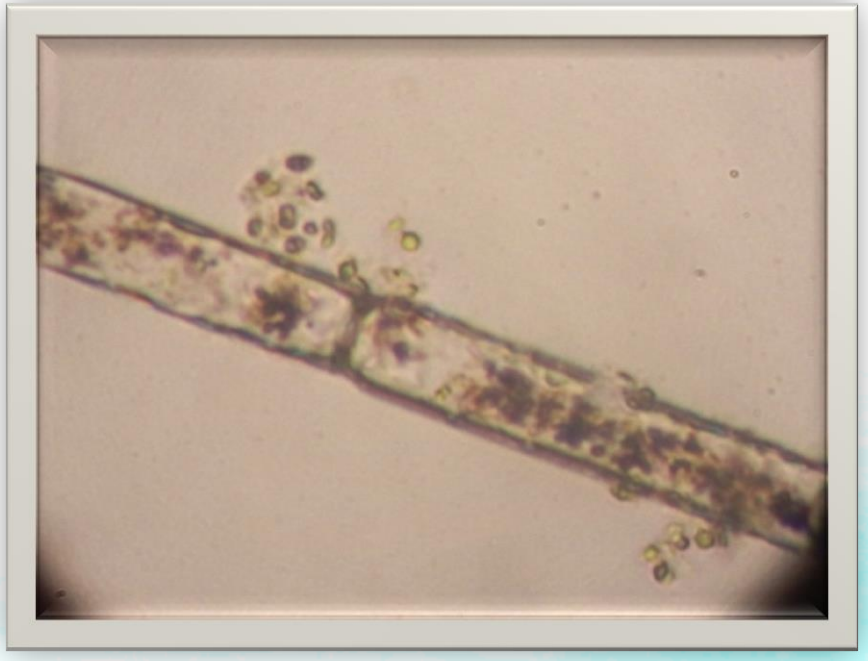
Our Findings…

Diatomaceous

Clamydomonas

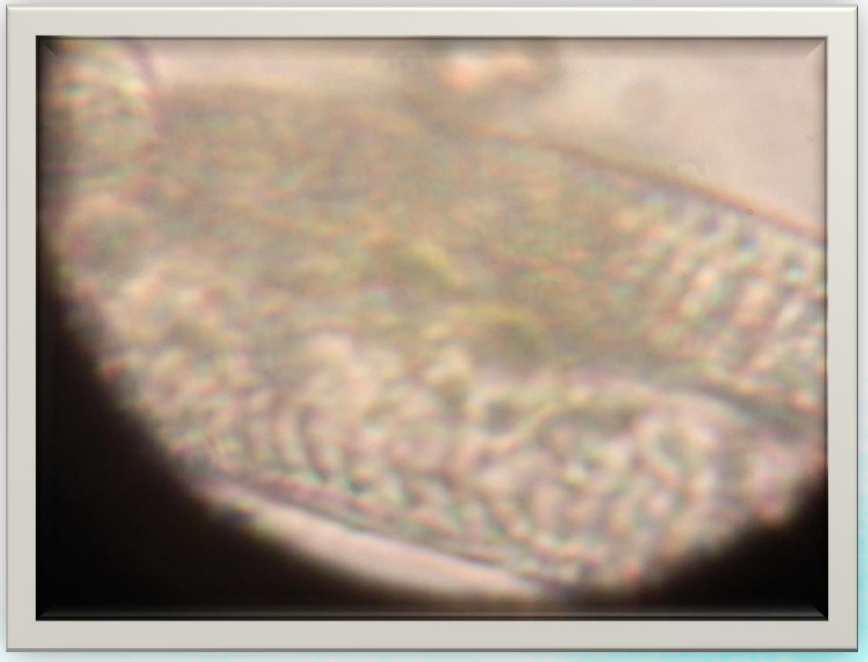


Our Findings…



Our Findings…

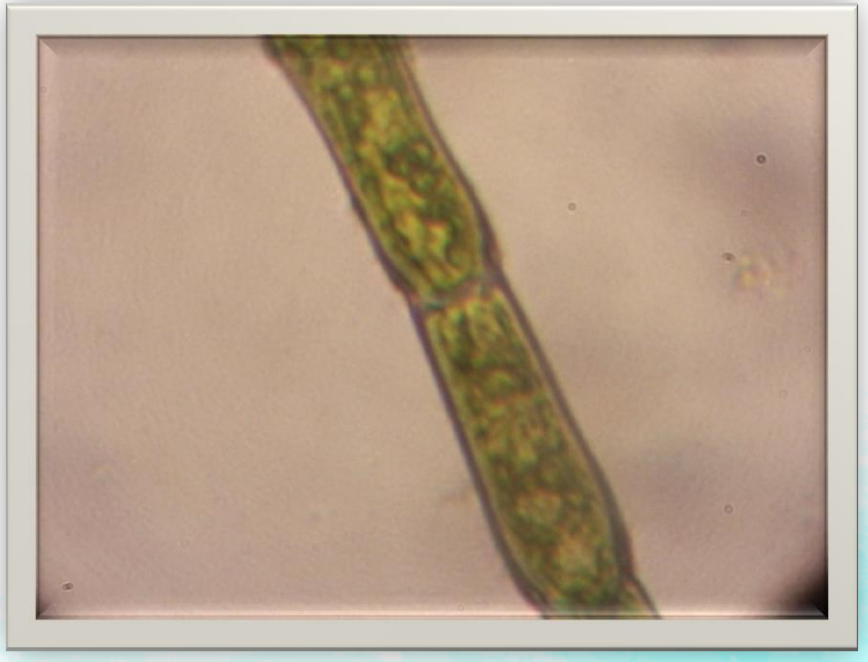
Diatomaceous



Our Findings…

Senedesmus

Chlorophyta



SIMTEJO