



LAB 4

Light the darkness!

LET'S DO IT!

What do we need?



MATERIALS

- ☐ 1.5 or 2 l glass or plastic bottle of water
- ☐ Water
- ☐ Bleach
- ☐ Food colourant
- ☐ Card / aluminium foil / cellophane paper or similar
- ☐ Glitter (optional)
- ☐ Room that can be left in complete darkness

TOOLS

- ☐ LED or mobile phone flashlight
- ☐ Scissors
- ☐ Gloves



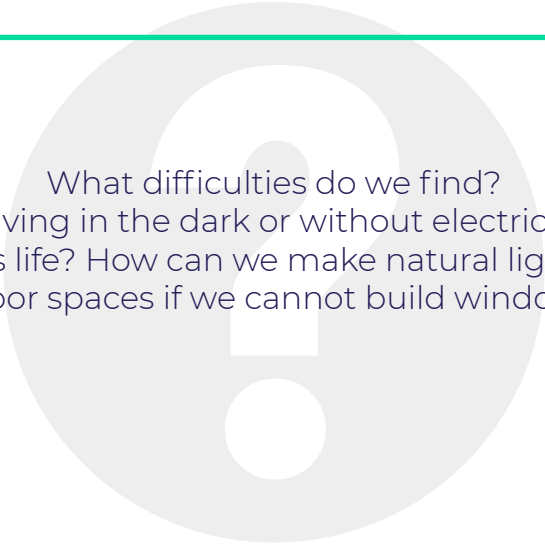
SAFETY MEASURES

- ☐ This experiment must be carried out under the supervision of an adult.
- ☐ Gloves must be used when adding bleach to the water.

PHASE 1

LIVING IN THE DARK

- 1/ Roll down the blinds and turn off the lights to make the classroom completely dark.
- 2/ Try to do usual activities in the dark, such as changing chairs with a classmate, reading a book, opening a window...

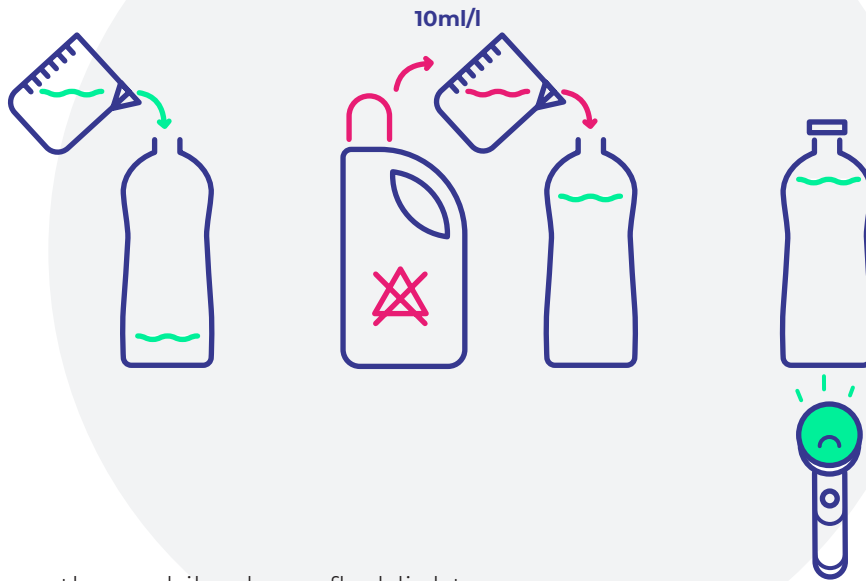


What difficulties do we find?
How can living in the dark or without electricity affect a person's life? How can we make natural light enter indoor spaces if we cannot build windows?

WRITE THE ANSWER BELOW 

PHASE 2

BUILDING A MOSER LAMP



- 1 / Turn on the mobile phone flashlight.
- 2 / Place the mobile phone on the table with the lantern pointing to the ceiling.
- 3 / Turn off the classroom lights and observe how the room is lit.
- 4 / Turn on the classroom lights and turn off the mobile flashlight.
- 5 / Take a 1.5 or 2 l glass or plastic bottle.
- 6 / Fill the bottle with water and add 1% bleach (10 ml per litre of water).
- 7 / Close the bottle.
- 8 / Turn on the mobile phone flashlight.
- 9 / Place the mobile phone on the table with the flashlight pointing to the ceiling.
- 10 / Place the bottle on the light taking care not to damage the mobile phone.
- 11 / Turn off the classroom lights and observe the lighting.
- 12 / Compare the lighting provided by the flashlight with and without the bottle on top.

PHASE 2

What is the difference between the room lighting when we use the mobile phone flashlight alone and when we place a bottle of water on top?

WRITE THE ANSWER BELOW



PHASE 2

Why have we added a bit of bleach to the water?

WRITE THE ANSWER BELOW



What are the advantages of a Moser lamp? What can it offer in areas where there is no access to electricity or in poor countries? What other applications can we find for this lamp apart from its use at home?

WRITE THE ANSWER BELOW



PHASE 3

DECORATING OUR MOSER LAMP



- 1/ Once you have the Moser lamp, you can decorate it to obtain an artistic effect.
- 2/ To do so you can:
 - A Add food colourant to the water
 - B Add glitter to the water
 - C Add coloured orbeez to the water
 - D Cover the bottle with aluminium foil or with a card after cutting different motives in it, such as a smiling face or the night sky constellations.
- 3/ After decorating the bottle, turn on the mobile phone flashlight.
- 4/ Place the bottle on the light taking care not to damage the mobile phone.
- 5/ Turn off the classroom lights.
- 6/ If you have more mobile phones you can compare the effect of all the bottles decorated and lit inside the classroom with the effect provided by undecorated bottles.

LET'S SOLVE IT!

In this laboratory we have seen how scientific and technological knowledge can be applied to solve daily life problems if we also use creativity.

**HOW WOULD OUR SOCIETY BE WITHOUT SCIENTIFIC
AND TECHNOLOGICAL KNOWLEDGE?
WHY IS SCIENTIFIC RESEARCH IMPORTANT?**

WRITE THE ANSWER BELOW

