



What is light pollution?- Mini lesson

Light pollution can be a difficult concept to explain. In this mini lesson, students better understand the basics of light pollution through a demonstration and discussion before moving on to other hands on experiments about this subject.

Time

- 15 minutes class time

Grade

1-3

Next Gen Science Standards

(KESS2-2) ESS3.C: Human Impacts on Earth Systems.

Utah Core Science Standards

3.5.1 Provide examples of how sunlight affects people and animals.

1.4.2 Living things change and depend upon their environment to satisfy their basic needs.

Materials

- Shoe box (either one for the class, or one for each student group)
- PowerPoint presentation or constellation pictures
- Mag light or other flashlight (one per box, or take turns sharing)
- Pencils
- Pushpins

Before and After homework

The day before doing this mini lesson prepare your kids by introducing the topic of the night sky. Ask them to go outside with their parents and record what they see. Can they see the moon? Do they know any constellations? Is it easy to see the stars?

The day after the mini lesson, again ask students to go outside and record their observations. Look not only at the stars but also the surroundings around your home. Are there street lights on around your house, or lights on in the house? Try turning all the lights you can off. How does it affect how you see the stars?



Light pollution introduction demonstration activity

Explain that a constellation is a grouping of stars. Constellations are human concepts, have existed for many years, and are different in different parts of the world.

Show students sample pictures of simple constellations or the power point. Which are their favorite? Why?

Now make your own constellation! You can choose to make one as a class, or have students in groups, and make one per group. Simply choose your constellation design, draw it on your box, then poke holes in the lid of the cardboard box with a pin to form your stars.

To view your constellation, put a small flashlight inside the box (a mag light with the top off works best). Close the blinds and turn off the lights. The lights should be easily seen. Turn back on the lights with the flashlight still on and watch how easily the stars disappear.

Explain that this is how light pollution works. The stars are still there, but we cannot see them if there is too much light at night (just like we cannot see stars during the day.... but they are still there).

Light pollution is defined as “any bad effect as a result of man-made lights.” This can mean so much light that we can’t see the stars (80% of children in the U.S. cannot see the Milky Way). Or any amount of light that is affecting animals, plants and humans. Humans need darkness to help them sleep. Light pollution makes it hard for humans to get the sleep they need so they can stay healthy. Animals are affected in many different ways depending on the type of animal. Animals need 4 things to survive: Food, water, shelter and space. Light pollution can impact all of these, preventing animals from living strong, healthy lives.

Helping solve the problem of light pollution can be very simple. Some ideas include turning off outdoor lights that don’t need to be on and teaching your family and friends about the importance of darkness at night. When everyone works together to help, we can limit light pollution to save our beautiful skies and our favorite species.

Constellation picture names

1. Ursa Major (The Big Dipper)
2. Orion the Hunter
3. Cancer
4. Southern Cross
5. Aries
6. Leo the Lion



Name: _____

Before and After Homework

Directions:

Work with your parents to answer these questions while discussing the beautiful night sky and light pollution.

Before:

Can you see the moon? _____

If you can see it, draw what it looks like.

Can you see the stars? _____

A large, empty rectangular box with a thin black border, intended for a child to draw what the moon or stars look like.

Do you know any names of constellations? If so what are they? _____

After:

Are there streets lights on around your house? _____

If you turn off your porch light (and the lights all around, including inside the house), how does it affect how you see the stars?

Why is it important to turn off the lights at night?











