



Making a Cleaner World: Sight & Sound Sustainability

When thinking about pollution, things like smoke, plastics and toxins are likely the first to come to mind. But did you know that excessive light and sound can also be pollutants?

In this discussion, you and your learners will explore the effects of light and sound pollution and brainstorm some creative ways to protect our eyes and ears – and that of the wildlife around us.

Dive in to learn how to make a cleaner world!



HANDS-ON STEM EDUCATION

For over 30 years, PCS Edventures has inspired students to develop a passion for Science, Technology, Engineering and Mathematics (STEM), focusing our efforts on making learning and discovery a fun and interactive process for grades K-12.

- CLASSROOM
- AFTER-SCHOOL
- HOME LEARNING

STEAM Connections

Science: Earth, Physical & Life; Technology: Communication & Collaboration

Overview

Discuss light and noise pollution and their greater effects on the environment..

Key Terms

Noise Pollution: the introduction of unwanted sounds into the environment.

Light Pollution: the excessive or poor use of artificial outdoor light.

Background Information

When thinking about pollution, air, water and soil pollutants likely come to mind first. However, excessive noise and light also have an effect on humans, wildlife and the environment. Too much light at night not only blocks out stars in the sky, but it can interfere with sleep rhythms, migration patterns and navigation. Excessive noise can cause hearing loss and confuse animals that rely on sound to navigate, find food, attract mates or avoid predators.

What are some ways that we can reduce light and sound pollution? Encourage your learners to think about their own activities first, and then expand outward to their community, state and beyond.

Whole Group Discussion

Model a responsive classroom by starting your morning meeting, discussion time or special lesson with this question:

- **What are the main types of pollution?** (Air, water, soil, noise and light.)

Answers will vary, and learners will probably start giving examples of pollution. If they're struggling to highlight the main categories, guide them towards air, water and soil pollution, then pose a new question.

We know pollution means introducing harmful things into the air, soil and water. Those pollutants are all physical substances we can feel or see on a microscopic level. But did you know there are two other types of contaminants that aren't concrete like car exhaust, pesticides and litter? I'm talking about light and noise pollution.

- **What is light pollution? How does it impact the environment?** (Encourage learners to think critically about the effects of excessive artificial outdoor light, then share the facts.)

Light pollution is the excessive or inappropriate use of outdoor lights. Long before the first lightbulb ever flicked on, plants and animals evolved to eat, sleep and live following the rise and fall of the sun.

These natural rhythms keep us healthy. Excessive light into the night interrupts those natural rhythms, which can cause fatigue, headaches, stress, anxiety and other health problems in people and wildlife. This light can also confuse animals, especially nocturnal animals, disrupting their navigation and migration patterns. On top of it all, light pollution makes it harder to observe the stars and space.

Luckily, there are a lot of ways we can reduce light pollution – and save electricity at the same time!

- **What are some ways we can reduce light pollution?** (Turn off exterior lights, close blinds or curtains at night, point outdoor lights down, properly shield outdoor lights, etc.)

Optionally, show your learners the *Globe at Night citizen-science campaign*. There, learners and their families can report their own nighttime observations to real-life scientists.

Just like light pollution, **noise pollution** is something that constantly surrounds us. Birdsongs, construction noise, airplanes — these sounds build up and can cause health issues.

- **How does noise pollution affect human health?** (Sleep disturbance, hearing damage, trouble focusing, increased blood pressure, etc.)
- **How does noise pollution affect wildlife?** (Limits communication, navigation, foraging, mating and increases stress for animals that rely on their sense of sound for survival.)

Get your learners thinking about solutions to sound pollution. You can start with *this story* on how a 13-year-old scientist published a study on the noise levels of hand dryers in public restrooms and their effect on children's hearing.

- **What are some ways we can reduce noise pollution indoors?** (Lower the volume on devices, turn off appliances when they're not in use, install curtains and carpet to absorb sound, improve building insulation (this saves energy too!), etc.)
- **How can we reduce noise pollution outdoors?** (Plant trees to absorb sound (and improve air quality!), repair/maintain machinery, switch to electric lawn equipment and vehicles (also reduces air pollution!), soundproof noisy areas, etc.)

Check for Understanding

- What are the five types of pollution?
- Why is light and noise pollution harmful?
- How can light and noise pollution be reduced?

Extensions:

As a group, visit www.lightpollutionmap.info, an interactive world light pollution map that provides a real-time look at artificial sky brightness.

For a closer look at noise pollution in your area, visit <https://howloud.com/>.

This Discussion Script is modeled from PCS Edventures' turn-key STEAM Programs, housing everything you need to hop right into a lesson. Looking for more environmental engagement? Check out:



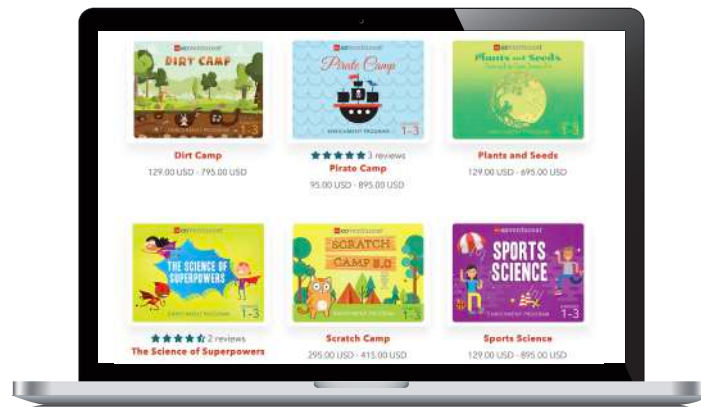
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