

Lesson 1: It's Dark In Here

Objects are only visible if they give off their own light or if an external light shines on them.

Students use a computer simulation to investigate whether different objects cause light to shine in a simulated dark setting.

Lesson 2: Shining Light on Danger

Light can be used to warn of danger.

Students obtain information from a text about problems faced by ships at sea and how light and lighthouse structures can be used as a warning.

Lesson 3: Shining Through

Light interacts with different materials in different ways.

Students work collaboratively to plan and carry out an investigation into how different materials placed in a beam of light cause different effects.

Lesson 4: The Shadow Effect

Opaque objects in a beam of light cause shadows. Shadow size and shape can be changed.

Students analyze patterns in investigation data to explain how the position and location of objects in a beam of light affect shadow shape and size.

Lesson 5: Bouncing Around

Light interacts with different materials in predictable ways.

Students use patterns in data to construct an evidence-based explanation of what results when light hits opaque, translucent, transparent, and reflective materials.

Lesson 6: Hide! Escape! Survive!

Animals have external structures that interact with light to help them survive.

Students obtain information from a text to explain how some external animal structures interact with light to help the animals survive.

Lesson 7: Reflecting on Safety

Interactions between light and materials can be used to keep people safe.

Students consider the problem of how to be seen in the dark and determine that the effects of light interacting with reflective materials can be part of a designed solution.

Lesson 8: Caution—School Students

Humans can design solutions by mimicking animals.

Students mimic animal use of reflective structures as they design a solution to the human problem of being visible outside when drivers have their lights on.

Science Challenge

Lesson 9: Emergency Escape Part 1

Light can interact with a material to make an object visible.

Students investigate how light interacts with new materials and explain how the effects could be used to make a path to safety visible in a dark room.

Lesson 10: Emergency Escape Part 2

Appropriate materials can be selected to make an exit door path visible.

Students explain the need to make the pathway to a door visible in a dark room and how a material from their investigation can serve the function of making the pathway to safety visible.