



Elaborate Investigation: “I Spy...”

Light Energy Module

This inquiry-based investigation provides students with the opportunity to demonstrate scientific reasoning and processing skills as they work in small groups to classify sources of light energy as natural or manufactured.

This offline investigation can be completed after participation in the online Engage, Explore, and Explain.

Teacher objective: To demonstrate that things that produce light can be natural or manufactured.

Student objective: Upon completion of this activity, students will be able to distinguish light sources that are manmade from those that are natural with 80% accuracy.

Estimated time for activity: 30 minutes

Materials:

- “Natural or Manmade?” handout, one copy per student
- Crayons

Procedure:

1. Lead a discussion where students identify sources of light energy in the classroom, including but not limited to the computer, ceiling lights, flashlights, projector, exit sign, and sunlight.
2. Record examples on chart paper or front board and discuss if each example is natural or manmade.
3. Distribute student handout “What uses Energy?” and crayons to each student.
4. Students choose one natural and one manmade source to draw on the student handout.
5. Students complete handout individually or with assistance as appropriate.
6. To extend the experience, discuss the items identified and how each is used.

Teacher background & discussion points:

Energy, unlike matter, is not something we can hold or touch. By understanding energy, we can better explain or describe how the objects and substances called matter act and react the way they do. In order to understand light energy, it is important to note that the light energy we discuss, teach about, and experience is the light we, as humans, can see. In order for us to “see” anything, we must have light. Light waves traveling from a source strike objects around us, which reflect some of that light, making them visible.

Light energy, or visible light, is just one type of radiant energy provided by the sun and other sources. Light energy travels in waves in all directions away from the source, and unlike sound energy, light does not require matter to travel as evidenced by the light from the sun reaching us here on Earth. Light waves move very quickly. You will see an airplane before you hear it; however, light energy does not pass through matter like sound energy can.



Light waves can be naturally occurring (as from the sun, lightning, or a wildfire) or manmade (as light energy resulting from light bulbs, lanterns, computers, or candles). To distinguish between the two, students will need to analyze two criteria:

1. The origin of the item: Can it be purchased in a store, or is it found in nature?
2. The source of power used by the item: Does it need to be plugged in to work, does it require batteries, or does it work without electricity or batteries?

Review:

At the conclusion of the lesson, remember to review the following key points:

- Scientists learn through observation.
- Scientists compare and contrast what they observe.
- Matter can be described, sorted, and classified through observation of properties.
- Collecting, recording, and sharing data are important science process skills.
- Objects that generate light energy can be natural (occurring in nature) or manmade (made by people).

Accommodations:

If students have difficulty identifying a light source as natural or manmade, a variety of accommodations can be employed.

- The teacher can lead the completion of the activity as a whole group.
- The activity can be completed with an aide or with the teacher in small groups.
- The activity can be completed with a science buddy from an older grade.



Name: _____

Date: _____

Natural or Manmade?

I spy a natural source of light energy. This is what it looks like:

I spy a manmade source of light energy. This is what it looks like: