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TEACHER GUIDE

INTRODUCTION TO LIGHT GRADES K-2

COMMON MISCONCEPTIONS

In relation to transparency, students may think that the thickness of an object impacts how transparent it is. Young students commonly think that if something is very thick light will not pass through it. This may be true in some cases such as a piece of paper vs. a package of paper, but it is not true in all cases. A thick piece of glass is still transparent just like a thin piece of glass. Light also passes through clean water whether it is shallow or deep. The ability of light to travel through materials is based on the specific properties of the materials.

An object is “seen” because light shines on it.

Light is needed for seeing an object, but it is dependent upon light reflecting off the object (or being made by the object such as in the case of the sun or a phone screen) and then traveling to our eye. Light is detected by our eye and then electrical signals are sent to the brain. This depth is covered only at older grade levels. At this grade level, the focus is simply on needing light to see something and understanding that light goes through some objects but not others.

LIGHT SOURCES

Objects that give off light are called light sources. The sun is our planet’s main source of light. Other natural sources of light include the stars and lightning. It is important to note that the moon is not a light source. It reflects light from the sun and does not make its own light. Historically, another important source for humans has been fire from campfires and candles. With the discovery of electricity, humans have been able to more easily see at night. Some man-made sources of light are flashlights, lamps, television screens, car headlights and lasers. Some species of animals generate their own light through a process called bioluminescence. For example, fireflies use light to locate other fireflies.

TRANSPARENCY OF OBJECTS

Transparency describes how well light will pass through a material. When light encounters a material, it can interact with it in several different ways. These interactions depend on the type of light and the nature of the material. Light passes through some materials but not others. If you shine a flashlight on a sheet of glass, the light passes through. A sheet of glass is transparent. If you shine a flashlight on a tissue, the light passes partly through. A piece of tissue is translucent. If you shine a flashlight on a basketball, the basketball blocks the light. A basketball is opaque. Anything you cannot see through is opaque.

TIPS FOR TEACHERS

Have students bring in one item from home that they think is transparent, one they think is opaque, and one they think is translucent. During sharing time, have each student show what they brought and explain why they think it falls into that category. If the class decides an item needs to be tested, use a flashlight to check. (An alternative is to have a three-column chart on poster board labeled transparent, translucent, and opaque. Have students cut out pictures of an item for each category from a stack of old magazines and glue or tape the pictures onto the chart.)

