Properties of Light and Electricity

4-5 The student will demonstrate an understanding of the properties of light and electricity. (Physical Science)

4.5.2 Illustrate the fact that light, as a form of energy, is made up of many different colors.

Taxonomy level: 2.2-B Understand Conceptual Knowledge

Previous/Future knowledge: In 1st grade (1-2.1), students recalled the basic needs of plants (including light) for energy and growth. Students have not been introduced to the concept of different forms of energy before this grade level. In 6th grade (6-5.1, 2), students will identify sources and properties of heat and solar energy. In 8th grade, students will recall that waves transmit energy (8-6.1) and will explain how the absorption and reflection of light waves by various materials result in the human perception of color (8-6.7).

It is essential for students to know that light is a form of energy and is made of many colors.

Energy

- *Energy* is the ability to make something move, happen, or change. -

Colors

- The different *colors* of light are revealed when white light is passed through a *prism* and separated into the different colors of the rainbow, called the *spectrum*.
- These colors are related to the different amounts of energy in white light.
- Each color represents a different amount of energy.

It is not essential for students to know the order of these colors in the rainbow or which colors are higher or lower in energy. They also do not need to know how projected colors mix to form different colors or white light, nor do they need to know which color pigments mix to form which different colors.

Assessment Guidelines:

The objective of this indicator is to *illustrate* the fact that light is made up of many different colors and that it is a form of energy; therefore, the primary focus of assessment should be to give or use illustrations as pictures, diagrams, or words that show light is made up of many different colors. However, appropriate assessments should also require students to *interpret* a diagram of white light going through a prism with different colors coming out of it; *recognize* examples of light being made up of many different colors; or *identify* light as a form of energy.