



Mission: What happens when light bounces off of a bubble?

Age: 5+

Time: 20 min

Materials: \$5

(Set-up: 5 min | Activity: 10 min | Clean-up: 5 min)

NGSS Alignment of Light and Bubbles Activity

The information below may not include every area that this activity can be linked to NGSS concepts

Disciplinary Core Ideas

PS3.A: Definitions of Energy

- Grade 4
 - Energy can be moved from place to place by moving objects or through sound, light, or electric currents.

PS3.B: Conservation of Energy and Energy Transfer

- Grade 4
 - Light also transfers energy from place to place.

PS4.B: Electromagnetic Radiation

- Middle School
 - When light shines on an object, it is reflected, absorbed, or transmitted through the object, depending on the object's material and the frequency (color) of the light.
 - The path that light travels can be traced as straight lines, except at surfaces between different transparent materials (e.g., air and water, air and glass) where the light path bends.
 - A wave model of light is useful for explaining brightness, color, and the frequency-dependent bending of light at a surface between media.

Performance Expectations

- **4-PS3-2:** Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.
- **MS-PS4-2:** Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.



Crosscutting Concepts

Energy and Matter

- Grade 3-5
 - Energy can be transferred in various ways and between objects.
- Middle School
 - Within a natural or designed system, the transfer of energy drives the motion and/or cycling of matter.
 - The transfer of energy can be tracked as energy flows through a designed or natural system.

Structure and Function

- Grade 3-5
 - Substructures have shapes and parts that serve functions.
- Middle School
 - Structures can be designed to serve particular functions by taking into account properties of different materials, and how materials can be shaped and used.

Engineering and Science Practices

Developing and Using Models

- Grade 3-5
 - Develop and/or use models to describe and/or predict phenomena.
- Middle School
 - Develop and/or use a model to predict and/or describe phenomena.
 - Develop a model to describe unobservable mechanisms.

Planning and Carrying Out Investigations

- Grade 3-5
 - Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.