

# Is the Sky Really Blue?

## **Action**

Adding different amounts of milk to a glass of clear water will make it appear as though the solution changes colour when a light is shone through it.

## **Grade Level**

Grade 1 - The Sky

Grade 4 - Light

Grade 6 - Light, Sound and Electrical Energy

## **Materials**

- A clear jar of fresh water
- A flashlight
- 1/4 cup of milk
- A tablespoon

## **Instructions**

- Shine the light through the jar from the back. Ask the students to observe whether or not the water has any colour.
- Add a tablespoon of milk to the jar of water and stir. Shine the light through again. Ask the students if they notice any changes in colour.
- Continue to add tablespoons of milk and stirring them in until the liquid appears to be pink when the light is shone through.

## **Safety**

No safety concerns

## **Science Principle**

When the light is shone through the clear water, the water appears to have no colour. This represents how the sky looks when there are no dust particles to scatter the light. When the first tablespoon of milk is added, the blue wavelengths of light (the shorter wave lengths) scatter as they do in the midday sky. The milk represents the dust particles in the sky. As more milk is added (more "dust particles") the light waves are scattered even more and the "atmosphere" becomes thicker. The water/milk solution then appears to be pink in colour and represents the action in the sky at dawn and dusk when the sky looks red.

Red light has the longest wavelength and lowest frequency of visible light. Blue light is at the other end of the spectrum of visible light and has the shortest wavelength and a higher frequency. When the light waves are scattered, they become visible as a colour. It takes only a few particles to scatter the blue light but several more to scatter the red.