

Lights Out

Can you see me? Red, orange, yellow, green or blue – what color do you think the majority of sea creatures are in the deep ocean? Simulate the behavior of light at varying ocean depths using blue filter goggles and understand why different types of creatures live in each layer.

TEKS:

5.1B Make wise choices in the use of conservation of resources and the disposal or recycling of materials (use recycled materials to make glasses)

5.2D Communicate valid conclusions

Materials:

- 1 1" x 1" felt square in red, orange, yellow, green, blue, and purple
- 1 9" x 12" sheet of black felt
- Blue cellophane
- Colored Pencils
- Multiple printouts of the glasses template
- Recycled file folders
- Scissors
- Optional: Pictures of deep sea organisms

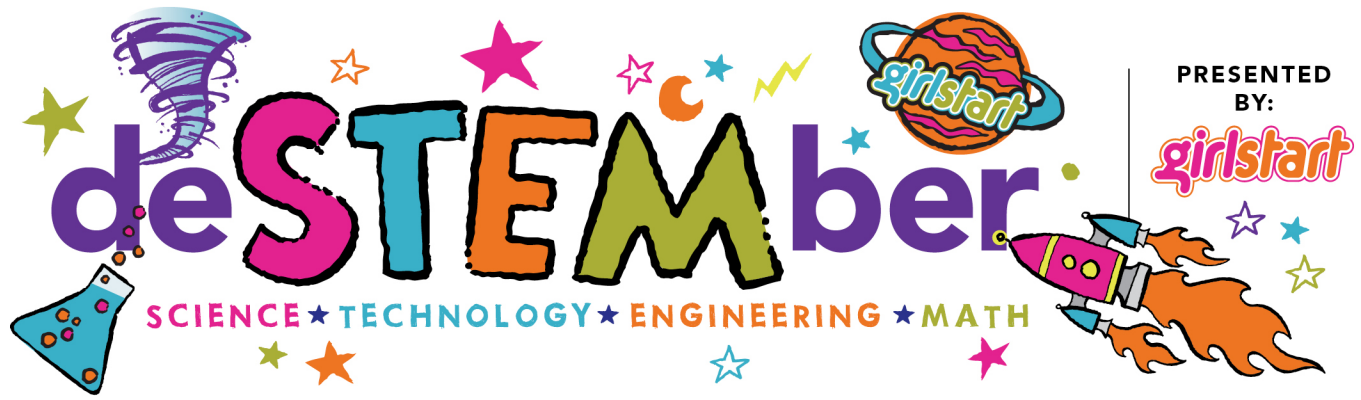
Preparation How To

- Attach each of the colored squares onto the larger black piece of felt
- Use the template to cut 4 pairs of glasses per group out of recycled file folders
- Cut blue film into strips approximately 5.5 inches long by 1.5 inches wide

Activity How To

1. Tape blue film strips onto each pair of glasses covering the eyeholes. Each student in the group will either attach 1, 2, 3, or 4 layers of blue film.
2. Examine the various colors of felt over the black background using each pair of glasses and observe which colors are visible.

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Why Does it Work?

A colored filter allows only one color of light to pass through the filter; all other colors are absorbed and therefore blocked from the eyes of the viewer. In the case of the blue plastic filter, all colors except blue are absorbed and the only color that can pass through is blue light. This simulates blue light being the only light that penetrates into deeper water. On land, an item will appear a specific color because it is absorbing all other colors and reflecting back its “color” to our eye.

Each color of the spectrum has specific wavelength ranges. The colors at the middle of the visible spectrum (yellow, green and blue) penetrate seawater to the greatest depth, while colors of shorter (violet) and longer (red and orange) wavelengths are absorbed and scattered more rapidly. This property of light influences the coloration patterns and distribution of marine organisms. Several organisms living in deep ocean depths have red coloration. Their red color effectively makes them “disappear” in the inky darkness, because no red wavelengths are present.

Career Connection:

Physicists study the natural world, from the tiniest subatomic particles to the largest galaxies. They study what things are made of (matter) and how things behave including the behavior of light through the electromagnetic spectrum. Understanding light’s wavelength and intensity is important in order to learn about certain characteristics of deep water creatures.

Additionally **Marine scientists** use this information to understand sea life habitats and adaptations.

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TEMPLATE FOR
GOGGLES

