STEM CAREER ADVENTURES

Dermatologist: Testing Sun Block

Adventure Description:

In this adventure, students will think like a dermatologist and test methods that can be used for protecting skin from the sun.

Activity

- Teacher Note: This activity requires some preparation before class. See Handout: Teacher Prep.

Step One: Background Information on Dermatologists and Sun Protection (5 minutes)

- Ask students if they have ever been to a dermatologist, or know someone who has been to the dermatologist. Brainstorm with kids about what a dermatologist does.
    - Explain to students that a dermatologist is a doctor who help people keep their skin healthy. Dermatologists help people with rashes, skin diseases, and moles.
- Tell students that sometimes, dermatologists even help people find out if they have skin cancer or not. Skin cancer normally appears as a funny-shaped mole or lump on the skin. Show Handout: Skin Cancer. Discuss how sun rays can cause cancer because they are made of ultraviolet, or UV, light. These rays can penetrate the skin and actually change the DNA found inside of cells. This causes them to replicate at an accelerated pace.
- Explain to students that skin cancer is normally caused from too much sun exposure without any kind of sun protection. Show Handout: Sun Protection.
- Explain to students that today, they will test different methods of sun protection to determine which method is the best at protecting skin from the sun's rays.

Step Two: Experiment Setup (10 minutes)

- Explain to students that they will now set up their experiment.
- Provide students with Handout: Testing Sun Protection Methods. Walk through the steps together as a class.
- Divide students into pairs or small groups.
- Have students complete Step 1 on the handout. Students will be labeling and filling baggies.
- Make sure to dim the lights before students handle the sun-sensitive paper. Explain to students that this paper tells us if there is a chemical reaction occurring between the paper and the light. If we dim the lights, it will prevent the paper from reacting with sunlight before the experiment begins.

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Step Three: Testing Sunblock Methods (15–20 minutes)

- Explain to students that they will now perform their experiment and test to see which sunblock method is best for blocking the sun's rays.
- Find a sunny place outside for students to perform their testing.
- Have students complete Step 2 on their handout.
- While students are working, ask them the following questions:
  - Which method do you think will block the most of the sun's rays? (answers may vary, but most students will expect the t-shirt to block all of the sun's rays)
  - Why do you think it is important to have a control baggie? (So we can compare how the methods for blocking the sun on the test baggies compares to a baggie with nothing blocking the Sun.)
  - What is causing a chemical reaction on the paper? (The sunshine is causing a chemical reaction on the paper.)
- After students are inside, have them complete Step 3 on the handout, making observations.

Step Four: Discussion (5 minutes)

- Have all groups present their results. As a class discuss what happened that they expected and what happened that they didn't expect.
- Explain that the t-shirt material worked the best, but it still didn't block all of the Sun's rays. Some rays got through the T-shirt. This is why dermatologists recommend some kind of sunscreen in addition to a T-shirt or other article of clothing. The combination of these two methods provides the most complete coverage.
- Ask students to brainstorm methods for testing different kinds of clothing.
  - For example, students could test different colored T-shirts, or thicker materials. Extend this adventure by having students test and compare different clothing.

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Materials List

Provided online:

- Handout: Teacher Prep
- Handout: Skin Cancer
- Handout: Sun Protection
- Handout: Testing Sun Protection Methods

Not provided (Each group needs):

- 4 sandwich size zipper baggies
- 4 pieces of sun sensitive paper
- Tray for holding the baggies
- 1 teaspoon commercial “zinc - free” sunblock
- 1 teaspoon home made zinc paste
- Piece of t-shirt material
- Permanent marker

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