

Be a Sun Safety Detective

Topic: The sun produces ultraviolet light.

Suggested grades 3-5

Target standards - Grade 4

Materials/Resources needed:

- Student activity sheet
- Solar energy beads (purple)
- Solar energy beads (multicolor)
- Sunscreens (SPF 8, 30 and 80)
- Small ziplock bags
- White paper plates
- String or chenille sticks
- Covered boxes or opaque bags to hold the beads
- Props to illustrate sun protection: sunglasses, hat, long sleeved shirt, umbrella etc.

Prep time: 15 minutes

Lesson time: 10 minutes

Teacher-guided templates: 1 hour

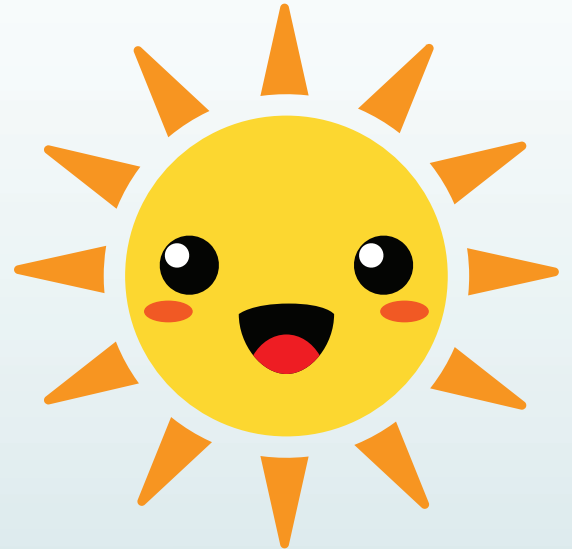
Outcome: Students will be able to discuss how the sun produces ultraviolet light and how this may have harmful effects on the eyes and skin.

Standards:

In appendix

Vocabulary:

In appendix



Prep



- Make craft items (string, chenille sticks and multi colored UV beads) available at a separate, common table.
- Have a sample UV bracelet available for demonstration.

Engage



- Wear a sun hat, sunglasses and a long sleeved shirt.
- Ask students if they have ever received a sunburn.

Teach/Build



- Ask students why they should protect themselves from exposure to the sun.
 - Write/draw the responses on the board.
- Draw a sun on the board with rays emitting at different lengths. Explain that the sun's energy has energy not visible to the naked eye. (ultraviolet light)
 - UV radiation wavelengths are short enough to break chemical bonds in the skin tissue. In addition to possible burns, over a period of time, with repeated exposure the skin cells can be damaged. (wrinkles, spots or cancer)
- Ask students how they can protect themselves from the UV rays. Refer to actions on the board. Add more if necessary.
- Ask the students if they know how to detect UV rays.

Explore/Engineer



- Tell students they'll be light detectives and will test the protective quality sunscreen by using chemically treated beads which are sensitive to UV light.
 - UV beads are not affected by visible light and will remain white or pale indoors as long as they are kept away from windows or doors through which UV light can enter.
- Pass out the Activity sheet to each student and give each small group of students a box or opaque bag of 5 purple beads.
- Have students go outside and test the various situations as indicated in the activity sheet. (The tests may require several trips in and out of the classroom.)
- Check that the students carefully record what they observe.
- After the students have completed the observation portion of the worksheet, have them discuss what they observed.
- Have students complete the questions on the lab sheet.

Activity



- Have students make their own UV bead bracelet using multi colored UV beads, string or chenille sticks.
 - Encourage the students to take home the UV bracelets and talk to their family about the harmful effects of UV rays.

Assessment



Students apply their learning by completing the UV testing lab sheet, discussing the effects of UV rays and making a bracelet.

Crossover



- Have students design other types of jewelry with the UV beads, which can be UV detectors.
- Have students design a Health and Safety brochure or flyer outlining the dangers of UV rays and how best to protect your skin from the sun.

Accommodations and Extensions



- Create a Public Information video on the ways to protect skin.
- Create a poster with animals illustrating how they naturally protect themselves from harmful effects of the sun.

Anticipated Misconceptions



- Students may think that the sun is not harmful.
- Students may think that one must have a sunburn to get skin cancer.
- Students may think that all sunscreen offers the same UV protection.

Safety



Sun protection may be needed for the students if they are working for long periods of time in the sun. Check the expiration date on sunscreen bottles.

Front Loading



Read one or more of the following books:

The Sun by Melanie Chrismer

Max and Mila at the Beach: A Sun Safety Guide for Kids by Amalyn Martin

References



Stanford Solar Center

<http://solar-center.stanford.edu/>

Too Much Sun is Not Fun – American Red Cross

http://www.redcross.org/images/MEDIA_CustomProductCatalog/m44240131_Too_much_sun_is_no_fun.pdf

Skin Cancer Foundation

<https://www.skincancer.org/prevention/sun-protection>

Additional References and Digital



This is how the UV rays see you

https://video.search.yahoo.com/yhs/search?fr=yhs-adk-adk_sbnt&hsimp=yhs-adk_sbnt&hspart=adk&p=U+light+skin+youtube#id=6&vid=e7469faf0b62133f97a5f608d928aeb1&action=view

Appendix



Standards

1-ESS1-1 Earth's Place in the Universe K-2

Use observations of the sun, moon, and stars to describe patterns that can be predicted.

Common Core State Standard Connection

- Mathematical practices.
- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.

Vocabulary

Energy – Giving off power like heat or light.

Solar – Having to do with the sun.

SPF (Sun Protection Factor) – The number on the sunscreen bottle which indicates how much protection from UV rays is provided.

Sunburn – Burning of the skin caused by ultraviolet rays.

Sunglasses – Special eyeglasses with lenses protecting the wearer from harmful UV rays.

Sunscreen – Special cream or spray, which protects the wearer from harmful UV rays.

UV (Ultraviolet) – Energy given off by the sun, which can cause sunburns and other health problems.