

Objectives

- Students will learn about the effects of the sun
- Students will experiment with the sun and shade
- Students will conduct experiments to understand the effect of the sun's heat and light

Introduction

Begin this lesson by taking your class on a brief field trip outside. This works best on a sunny day. Begin by walking students out to a sunny spot. Ask them to describe how they feel in the sun. Tell students to try to memorize the feeling of being in the sun. Next, walk with the kids over to a shady spot, preferably under a big tree. Ask students to describe what the shade feels like.

Have students imagine if they were in the sun for a very long time, how would the shade feel then? Return to the classroom with your students. If you would like, bring a thermometer and take the temperature in both the sunny spot and the shady spot.

Learning Activity

Bring the students to the carpet and show some of the artworks from the Springville Museum of Art's permanent collection. (Posters for most of these are available for free at smofa.org). Begin with John Hafen's *The Mountain Stream*. Point out how there are shady spaces and sunny spaces in this painting. Ask them to remember how they felt in the sun and shade. Give them time to close their eyes to try to remember the shade vs. sun.

Ask the following questions:

- Which one would have a high temperature, the sunny spots or the shady spots?
- Where do you think plants would have a harder time growing? Why?
- What would happen if a plant spent too much time in the shade? What about too much time in the sun?

Now show the image *Riders of the Range* by Paul Salisbury. Ask students to describe the landscape in this image. Are there many shady spots here? This is a good time to talk about how much of Utah's landscapes are in deserts.

Show the other artworks and from the Museum's permanent collection and ask similar questions.



Paul Salisbury, *Riders of the Range* 1953

Materials

- Images from the Museum (See Images from the Museum)
- Thermometer
- Construction Paper
- Lightweight Cardboard (Cereal Boxes)
- Tape
- Pencils
- Notebooks
- Tomato Plants
- Styrofoam cups

Images from the Museum

- Paul Salisbury, *Riders of the Range*
- John Hafen, *The Mountain Stream*
- John Fairbanks, *The Great White Throne Through the Saddle*
- Armon Valoy Eaton, *Antelope*

Utah Core Standards

Science Standard 5

Students will understand that the sun is the main source of heat and light for things living on Earth.

Science Standard 5 Objective 1a

Compare temperatures in sunny and shady places

Science Standard 5 Objective 1b

Observe and report how sunlight affects plant growth.

Visual Arts

Standard 4 Objective 3a

Use visual arts form as a help in expressing an idea in a non-art subject; e.g., a science project, the writing of a poem, a social studies project.

Science Experiment

As a class, you will conduct a class experiment about the effects of the sun on plant growth. Using three identical containers, plant three tomato plants. If you use Styrofoam cups, be sure to poke a hole in the bottom so what can circulate. Label the three containers with #1, #2, and #3.

Allow each plant to have different exposure to sunlight. The first plant should receive no light, the second six hours of light and the third should receive no light.

Each day, give students time to check on the plant growth. Have students keep an observation journal where they sketch the plant growth each day.

Art Making Activity

Explain to students how the sun's heat and light can cause changes to things.

1. Using a light weight cardboard (an old cereal box will work) have the students cut out various shapes (squares, triangles, circles, squiggle shapes etc.)
2. Have students tape several shapes onto a piece of 8"X10" construction paper. Make sure that the tape is completely covered by the cardboard, so there are no loose ends hanging over the sides of the cardboard. You will be removing the shapes later. You can also use plants and leaves



3. Tape the pieces of paper to a window that has direct sunlight. Leave the paper up for about a week.
4. After a week, remove the paper from the window and have students take the cardboard shapes off of their paper. The sun will have lightened the construction paper, leaving printouts of their shapes on the paper.
5. In a class discussion, ask students to describe what happened. What caused the change?

Extensions

You may want to send the students outside to do some investigation of the plants at your school. Give them time to observe and sketch plants in different areas. They should look at shady places vs very sunny places. In which area do the plants appear to grow the best?

Assessment

Ask students to write about their sun-art experiences. Check students journal entries after you have completed the tomato plant activity.



John Hafen, *The Mountain Stream* 1903



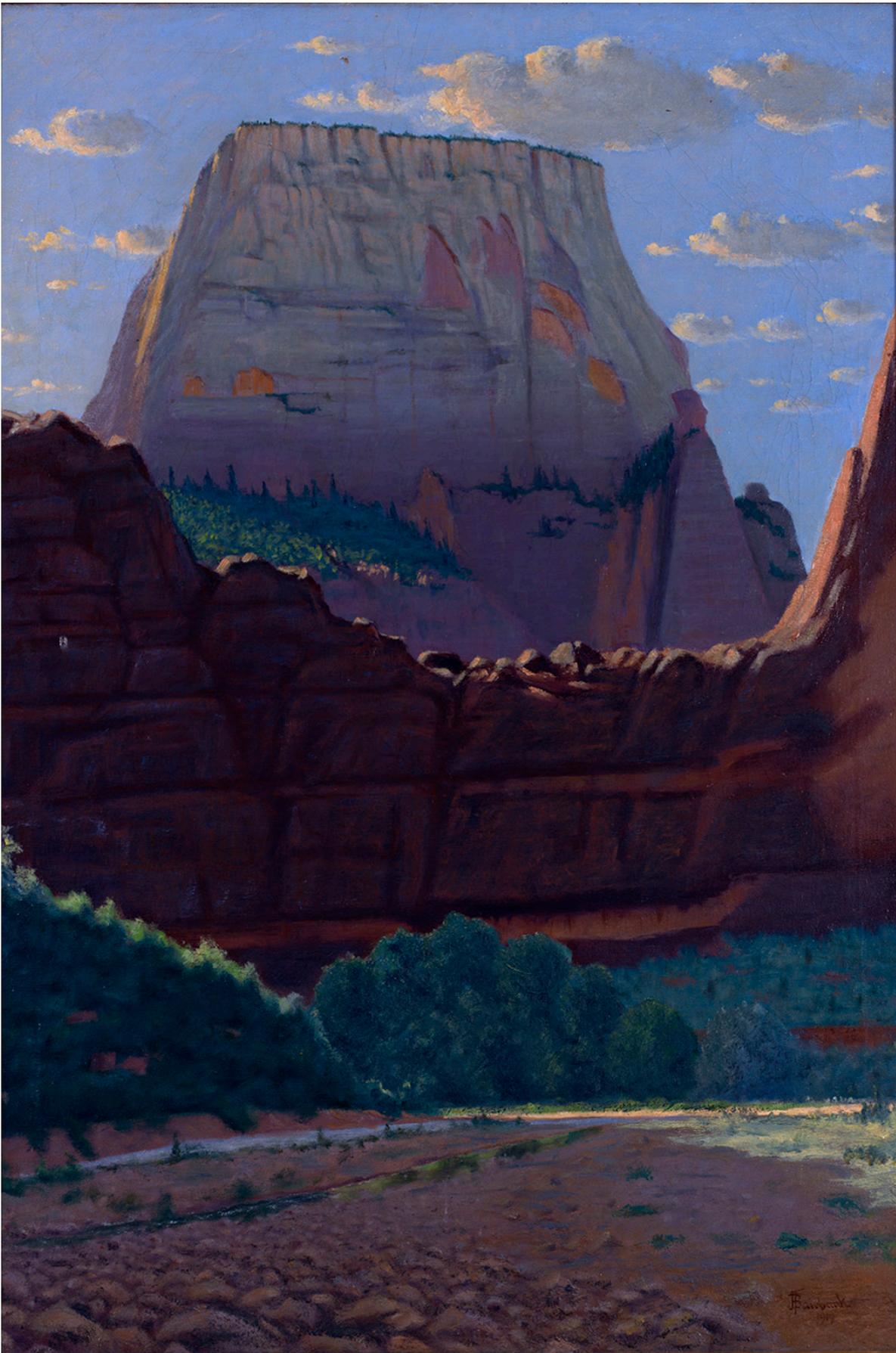
John Hafen, *The Mountain Stream* 1903



Paul Salisbury, *Riders of the Range* 1953



Armon Valoy Eaton, *Antelope* 1971



John Fairbanks, *The Great White Throne Through the Saddle* 1919