Classroom Activity

Cameraless Photographic Processes

Enduring Understanding	Photography is an art and a science. Photographers are artists who use light, instead of brushes or pencils, to create images.
Grades	3–12
Time	Two to three class periods
Visual Art Concepts	Line and shape (organic and geometric), negative and positive space, balance, value, contrast, composition, process, abstract and representational
Materials	Light-sensitive paper such as Sunprints, 2D collage materials, scratch paper, cardboard, and water. Optional: matte gel medium, burnishing tools such as spoons or rolling pins, and baby wipes for clean-up.
Talking about Art	View and discuss Rosa Rolanda's *Drawing Photogram*, c. late 1920s. Compare and contrast with other artworks in Rolanda's photogram series featured on the CD. Describe the shapes that you see, noting the contrast between geometric and organic. Curvy shapes such as circles and ovals are organic shapes, while shapes with straight lines and angles such as squares and triangles are geometric. Use your finger to outline some of these shapes in the air. Which represent or are inspired by shapes from real life? Which shapes are abstract, or non-representational? How do you think Rolanda might have created this image? Some lines appear to be hand-drawn, such as her face and body, while some shapes, such as the animal seated at the figure's feet, look like outlines of unusual or curious objects. Note the value of these shapes. Value is the degree of light and dark in a composition, line, or shape. The contrast between black and white is most evident between the black background and white lines, but take a look at the pyramidal shape in the center. How would you describe the value of this shape? Opaque or translucent? Luminous or dull? The contrasting values were created with light using a cameraless photographic process. Rolanda's image and the accompanying artworks in her series are called photograms. A photogram is a photographic image of objects that have been placed on light-sensitive paper and then exposed to light. During the exposure period, a negative of the composition develops and areas of the paper that have received no light appear white, while areas that have received light appear black. Grey areas result from light traveling through transparent objects. Take a look at the pyramidal shape again. Do you see the inverted glass that Rolanda used to create this effect?

Making Art

Creating photographs without a camera is easier than you think! Ask students to collect an assortment of objects from home, the classroom, or even school grounds. Consider objects or materials of varying sizes with interesting outlines or shapes. The best cameraless photographs utilize objects or materials with holes or gaps in space, such as keys, netting, or plants. These types of materials produce shapes and lines that emphasize negative and positive space. To help students collect objects of appropriate size, determine the scale of the light-sensitive paper in advance (Sunprints come in various dimensions) so that students can limit themselves to objects that will fit within the frame of the paper.

Spread the accumulated source materials out on a desk. Give each student a piece of scratch paper of equal dimension to the Sunprint paper. Arrange objects on the scratch paper to create a composition. Consider compositional balance of positive and negative space and the differing values that they will create.

For best results, close all classroom blinds before you distribute the Sunprint paper (even ambient light will start the exposure process). Carefully arrange objects on the Sunprint paper (blue-side facing up) by removing objects from the scratch paper and placing them one-by-one on the final photographic surface.

Place each Sunprint paper (with its accompanying materials) on a piece of cardboard and leave in the sun for two to five minutes or until the blue background has turned nearly white. Exposure times will vary depending on sunlight, but be sure not to overexpose! Take the print inside, remove all objects from the surface, rinse gently under water or in a small tub for one minute, and allow the print to dry.

Build on your print to create a photographic collage by incorporating other image transfer techniques. For example, photocopy an image or print an image on a laser printer and cut out a selection for reproduction. Apply matte gel medium to the front of the image, adhere the wet image (face down) onto a prepared surface, and burnish the back of the image by rubbing it firmly with a spoon or rolling pin. Dry (with a blow dryer to expedite the drying process) and rub the remaining paper off with water using your fingers until the image is revealed.

Reflection

Visit www.sunprints.org/activities for suggested ways to connect this artistic process with science experiments. Measure the effectiveness of different sunscreens, take pictures of magnetic fields using iron filings, or chart the sun's progress through the sky using the Sunprint paper. For older students, consider extending the lesson by creating a makeshift pinhole camera (visit www.kodak.com and search "pinhole camera") using film and ordinary household materials.

Compare the results of your scientific and photographic experiments with the original photogram. Discuss the nexus of art and science by studying the work of famous artist/scientists such as Leonardo da Vinci and Louis Daguerre.