Printmaking with Light

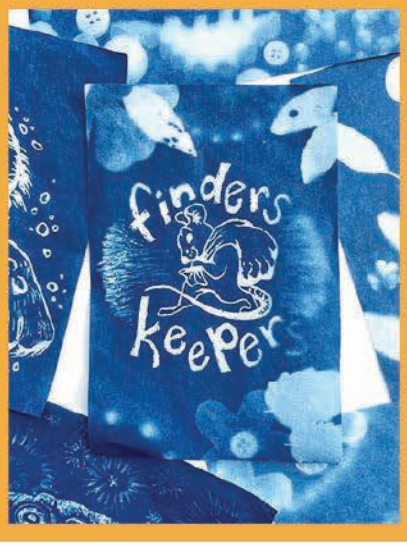
Grade 8

Subject: physical science

Time: 1 class period

Description

In this lesson, students will create a cyanotype using various found objects. While doing this, students will learn more about the electromagnetic spectrum and how different types of light waves interact with the world around us.



State Standards

8-PS4-2 : Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials

Learning Objectives

Students will be able to utilize the properties of light to create a photographic print from scratch.

Students will be able to analyze the relationship between an object's color and a light wave's frequency.

Students will be able to describe the parts involved in a photochemical reaction.

Printmaking with Light

Grade 8 | Subject: physical science | Time: 1 class period

Materials

Required:

- Pre-treated cyanotype paper
- Found objects *(buttons, beads, stencils, leaves, shells, flowers, feathers, etc.)*
- File folders
- Clear sheet protectors
- Shallow tubs or pans
- Black sharpies
- Black acrylic markers
- A towel
- Rocks/paperweights

Additional:

For treating cyanotype paper from scratch:

- Cyanotype Sensitizer Set
- Bristol paper
- Wide paintbrush
- Black cardstock *(to construct a light-proof folder for the light sensitive papers)*



(Your set up might look something like this)

Assessment Questions

What type of light waves cause the paper to change color?

Your final cyanotype is the color blue, which means it (A) reflects or (B) absorbs blue light?

The white negative on your print is all the areas that were (A) exposed to or (B) blocked from electromagnetic radiation (aka sunlight)?

Instructions



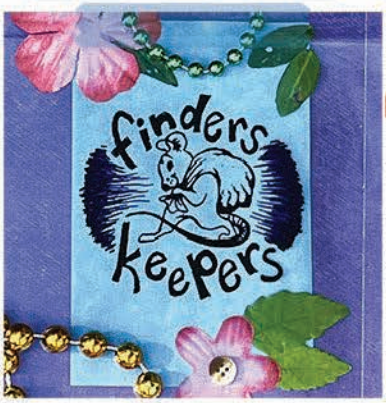
1 Have your students bring some small found objects, look through a collection you brought to class, or collect some leaves and plants outside. Then, pass out to each student a file folder with a piece of the light sensitive cyanotype paper inside it, along with a transparent sheet protector.



2 For students that want to print their own designs, you can have them draw their design directly on the sheet protector with a Sharpie/acrylic marker. Though, from my own experience, the acrylic markers produce clearer lines when printed than the Sharpies, but I would recommend giving students both options to experiment with.



3 Dim the lights in the room as much as you can and allow your students to open up the file folder with the cyanotype paper. Let your students figure out the composition of their cyanotypes inside the file folder, using it as a shield from any light. *(Tip: It might be better to make sure that the light sensitive, blue side of the paper is facing down to ensure it is not accidentally exposed while students design their layouts.)*



4 Once your students have figured out their compositions, instruct them to put their cyanotype papers back in their file folders blue side up, grab their materials and head outside. Have the students place their file folders in a sunny spot, and crack open the folders enough so they can quickly rearrange their compositions. After that, fully open up the file folder and expose the cyanotype paper to the sunlight. *(Tip: If students are using any light-weight materials, try to avoid windy days, or secure materials appropriately.)*

Instructions



5 Depending on how cloudy it is outside, the exposure time needed for the cyanotypes might vary. Generally, I would recommend exposing the cyanotypes for at least 5 to 10 minutes , or until the blue paper fully turns a light gray or brown. Students can also experiment with over-exposing their prints, which will result in lighter colors, but possibly more detail.



6 When students are done exposing their prints, have them close their folders and take their cyanotypes to a shaded area or a dimly lit room and quickly place them in shallow pan/tub of water. This stops the reaction and sets the print. You slowly start to see a negative of your composition appear as you submerge it in the water.

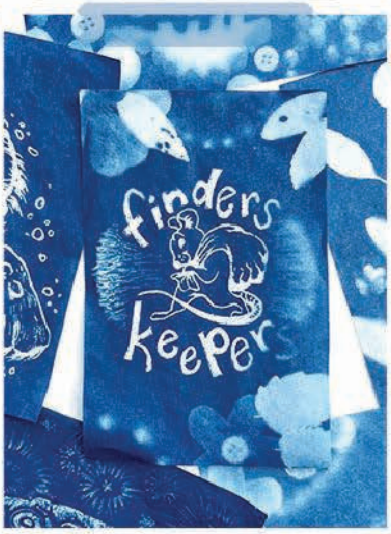


7 Leave the paper in the water for about 5 to 7 minutes , gently moving it around. All of the areas that did not get exposed to sunlight should now be white, and all of the areas that did should now be a vibrant blue.



8 Once the negative is clearly visible, students can take their prints out of the water , and leave them to dry on a towel.

Instructions

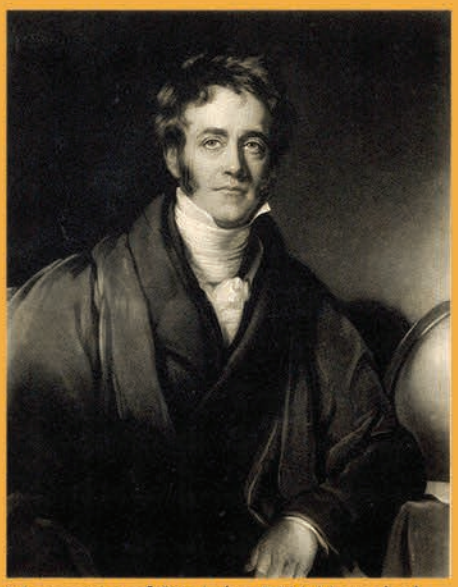


9 After the paper is fully dried, you and your students should be left with a proper cyanotype! These blueprints make great pieces of art on their own, but students can also use them as a springboard for an illustration, material for journaling, or as an unique way to document the world around them.

Art History

Cyanotypes are an alternative photo - graphic technique that was discovered in 1842 by Sir John F. W. Herschel. The process uses a light sensitive solution made up of ferric ammonium citrate and potassium ferricyanide , which is spread onto paper or fabric and left to dry. Once placed in sunlight, the dried solution reacts with ultraviolet (UV) rays and produces the pigment Prussian blue , along with a negative of the image or object placed on top. The rest of the solution is then rinsed off with some water, fixing the negative to the paper.

The cyanotype process has made consi - derable contributions to scientific and artistic fields since its inception. Only a year after the cyanotype was first created, Anna Atkins, an English botanist, used cyanotypes to photo - graph various species of algae. Atkins then published her cyanotypes in a book called *Photographs of British Algae: Cyanotype Imp - ressions*, which is considered to be the first book illustrated with photographs. Add - itionally, the cyanotype process was used to create to - scale copies of architects' technical drawings, which were aptly named blueprints. Through creating their own cyanotypes, stud - ents can take part in this scientific and artistic legacy.



Mezzotint of Sir John F.W. Herschel, 1835



Page from Photographs of British Algae: Cyanotype Impressions, Anna Atkins, 1843