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▶ 20 Questions

photo: students

photo: student

by Jeffrey Stanley

Summer Arts Study in Pinhole Photography Makes Indelible Impressions on Young Students

This year's Summer Arts students got a chance to test their creative picture taking abilities and learn the mechanics of photography by building their own cameras in **Beth Riemer's** pinhole photography workshop. "What is so wonderful about making pinhole cameras is that it gives them the opportunity to learn both the science and the art of photography," says Riemer. "Because we made our tool from scratch, the mystery of photography was revealed."

Riemer, who graduated last May with a masters degree from [Pratt Institute](#), has experimented with pinhole cameras since her own high school days. "It is more explicit than the photography we are familiar with, clicking a button and out comes a photo. Pinhole photography allows us to really experience the process of making an image."

In pinhole photography, a camera can be made from any light-proof container, such as the cylindrical salt boxes students used this year. "Photographers who work in pinhole [photography] make cameras out of virtually anything," Riemer says. "In fact, I know of an artist who has made everything in his kitchen into a pinhole camera, from the milk carton, his oven, to the fruit in the fruit bowl. The most important thing is making it light-tight. While a pinhole punched into the container serves as the aperture and there is no lens, all the fundamental principles are the same."

Riemer is careful to distill the science into layman's terms for her young audiences. For example, she responds to the question, "How do we get the image?"

She explains, "Light travels in straight lines. When light is reflected from an object...some light will travel towards the pinhole camera and a small cone of light rays will enter the pinhole. Each point on the object will be projected as a circular patch of light on the film. The science of photography is pretty mysterious and sounds complicated but it is rather simple when actually doing it."

Riemer is well aware that making a camera from an empty food container can be "pretty abstract" to a young mind. To help demystify the process, she brings in a standard 35mm camera on the first day of the workshop. "We discuss all the parts and what they do, the shutter, the aperture, etc. Then, we make connections between all the parts. For instance, covering and uncovering the pinhole with a piece of black tape is the same as pressing the button. I show them the inside of the camera so they can see that when I click the button, the shutter is basically a door that opens and closes to let in the light. Making these connections helps them to understand the process."

Riemer was pleased that every student's camera worked perfectly the first time in the summer workshop. "That is a sure sign of how well the children listened while making the cameras."

Transforming a Box into a Camera: Four Steps

However, while they followed instructions very well, a lot of them still doubted at this point that the salt box 'cameras' would actually take real photos."

Instead of traditional film, students loaded their cameras with individual sheets of photographic paper, which is coated in silver nitrate. They shot in several locations over a period of days. "On the sunny days we went outside on the roof or on the sidewalk and began with self portraits."

The shutter must be held open for an average of 15 seconds on a bright day, longer on cloudy days, and the camera must be held perfectly still during that time. "Even when you feel like you are holding it still, your breathing can move the camera enough for the picture to be blurry."

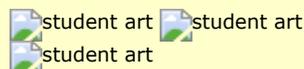
This summer's ubiquitous rain clouds turned out to be a blessing in disguise for the young photographers. "Because this summer was so rainy, things took a turn, and we needed to stay inside to shoot. This is challenging for pinhole photography because we are not working with a flash. So we set up a photo studio in the art room with lights and a backdrop. This turned out to be great and the children got the chance to really play with composition and double exposures."

For these indoor, studio style shoots Riemer asked the kids to bring in favorite items from home. These ranged from stuffed animals, their favorite books or action figures. One of her fondest shots was created by the student who brought in a journal and photographed it for 20 seconds, then without closing the shutter opened the book and held it still for 20 more seconds. "Because of the long double exposure the photo came out having this wonderful movement of the book's pages. Several of the students experimented with this trick which is very conducive to pinhole photography's long exposure times."

Each pinhole camera can take one photograph at a time before needing to be reloaded. "After the exposure is made, we go back to the darkroom and develop our pictures, putting them through the chemical baths: developer, stop bath, fixer and the water bath."

The darkroom part of the process is the most scientific, and can be the most challenging part of photography for kids. Attention to detail in these final steps is paramount in order for the students' photos to properly develop. "I try to give every student a sense of responsibility with the routine and equipment, so if there is a moment when I am busy with one student, the other children can help each other."

Overall, "the kids loved it," says Riemer. "Kids love to learn about how things work. Modern photography does everything for us so we never get the chance to learn about the process. Making a camera that works and knowing how it works is an extraordinary experience for children. In this workshop, the children didn't just take photos, they made them."



5 FUN FACTS ABOUT PHOTOGRAPHY

provided by Beth Riemer

1. The word "photography" comes from the Greek words for light and writing. Johann von Maedler, a Berlin astronomer, first used the word in 1839.
2. The first camera was called the camera obscura, which means dark chamber. In a darkened room, a small hole in the wall allowed an outside image to be projected into the

Turning a salt box into a camera takes four basic steps.

1. First, "make a lid that can come off easily in order to load the film, but tight enough so light does not leak in. If you have a light leak, your negative will come out black," she cautions.

2. Second, push a sewing needle through a thin piece of aluminum to create the pinhole, and attach this to the erstwhile salt box.

3. Next, "paint the inside black and tape up any seams with black masking tape."

4. Lastly, make a shutter out of black tape.

room, upside down. Eventually, smaller sized cameras were developed and mirrors were added to right the image.

3. The photojournalist Weegee developed his photos in the trunk of his car.

4. The aperture on the camera is a circular hole in the lens that restricts the amount of light passing through the lens to the light sensitive film.

5. Developing photographs requires four steps: developer, stop bath, fixer and the water bath.

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