

Solargraph Camera

Outdoors, Age 6 – 16, Cost per student in £– 0.40

Curriculum areas – Astronomy, Science, Art, Photography, Chemistry, ICT, Recycling

Every school in the world should install a solargraph camera.

Pinhole photography uses time to be creative with the light from the sun. Solargraphy adds the wonder of astronomy.

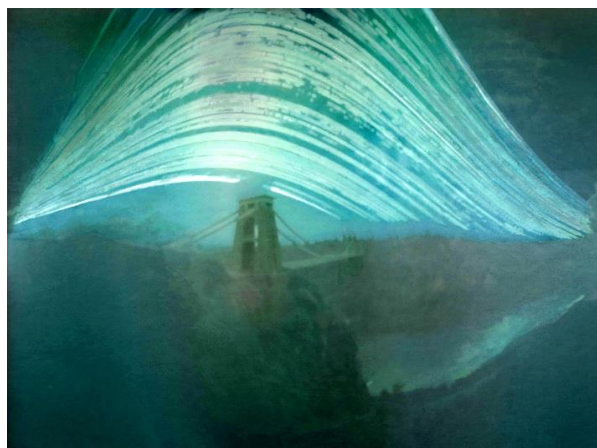
What does it do?

A solargraph pinhole camera records the trail of the sun as it, (apparently) crosses the sky and rises and falls with the seasons.

A 3 - 6-month exposure will enable you to image the arc of the sun throughout the year. Your

class will also get a camera to look at with awe as the light through a small hole draws its 6-month journey half way around the sun overlooking your school.

As well as costing a mere 40p, it requires no chemistry with the image appearing on the light sensitive paper over time similar to getting a sun tan.



[Video here](#)

[Further information here](#)

How do I make the camera?

You will need:

- An empty washed out aluminium drink can
- The base cut off another drink can
- Some light sensitive photographic paper (5 x 7inches - 13 x 18cm size)
- A pin
- Some gaffer tape
- 2 large cable ties
- A step ladder!

How is the image made?

When the light from the sun hits the silver on the surface of light sensitive photo paper it darkens. As the sun crosses the sky it draws a black line, a negative of what it is 'seeing'. Every day when there is sunshine, a line is drawn. If clouds pass in front of the sun from time to time the lines will appear as dashes.

After several: days, weeks, months, in subdued light indoors, the paper can be taken out of the camera showing a negative image. This is either scanned on a scanner or photographed with a mobile phone and then saved as an image file which can be inverted into a positive. The original negative can be put into a book away from light which would, in time, degrade the image.

When should I install the camera?

Any time is fine although September, (near the start of the school year) is good as the sun is quite low. Also the 20th of September is the equinox when there are 12 hours daytime and 12 hours night-time. You could even incorporate the history of science and find an anniversary of a scientist or photographer using this as a date to begin the exposure.



Where should I install the camera?

The camera requires pointing towards the sun, South (in the northern hemisphere) North (in the southern hemisphere).

South East or South West will be fine as the camera gives a very wide field of view of around 160 degrees.

Find a lamp post or high fence overlooking your school and, ideally, a step ladder. It is really important to position the camera out of reach of people/footballs etc. Cable tie the camera with a couple of cable ties making sure the can isn't crushed. Then take the shutter off the pinhole to start the exposure.

How long do I leave the camera up for?

It is perfectly possible to do an exposure just for a day although it would need to be sunny. The longer you leave it up for the more lines you will get.

The image on the right is exposed for 24 hours with a leaf skeleton placed on the paper within the camera.



How do I get the final image?

Take the camera down and cover the pinhole. Find a scanner. You can photograph the image with a mobile phone but a scanner will give a better copy.

Scan the image at around 300dpi and in colour. After scanning the image, place the negative in a book to prevent it darkening. The digital image can then be inverted and contrast / brightness added or taken away.

Can I buy them?

There are some on the market but the cost of one of these is as much as making one for every member of your class.

Initially it is best to make one in front of the class, out of discarded materials and show your students (and school finance officer) that you don't need to buy things all the time.

